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THE

MINING WORLD INDEX

of Current Literature

VOL. IX FIRST HALF YEAR 1916

By GEO. E. SISLEY
Associate Editor
Mining and Engineering World

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PREFACE

A few changes have been made in this volume of Mining World Index of Current Literature, but these are only of a minor nature. The importance of flotation is clearly shown by the considerable matter that has been brought out on this present-day development. Several other departments have undergone a closer classification, all changes being made with the one object of improving the usefulness of the book and making it a reference work of value to all who have occasion to use it.

As in previous volumes the world's literature on mining, metallurgy and kindred subjects appearing in periodical magazines published in America, Europe, Africa and Australia, have been arranged in classified form. These articles cover mining, engineering, metallurgy, geology, mineralogy, etc. There is also included papers read before institutes and affiliated engineering and technical societies, as well as reports of Federal and State Geological Surveys and Mining Bureaus at home and abroad, and new books. By the system of cross-indexing adopted what is wanted on any mining or affiliated subject is readily found. A brief digest of all articles is given so that a general idea of the article may be obtained. Where more than one author occurs the first-named appears in alphabetical arrangement; the other or others will be found by referring to the authors' index.

In the search for some particular article covering a certain subject it should be remembered that when reference of any importance is made in that article to more than one subject, the article will be indexed under the different subjects. Careful thought is given to the arrangement of subjects and the classifying of same, and the author would be glad to receive any criticism or suggestion, the adoption of which would make the book of more value to the busy man.

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A

Acetylene Journal.
African World.
Alabama Geological Survey.
Alaska & Northwest Mining Journal.
All-Alaska Review.
Allianza, Mexico.
American Ceramic Society.
American Chemical Society.
American Electrochemical Society.
American Fertilizer.
American Foundrymen's Association.
American Industries.
American Institute of Chemical Engineers.
American Institute of Electrical Engineers.
American Institute of Metals.
American Institute of Mining Engineers.
American Iron & Steel Institute.
American Journal of Science.
American Metal Society.
American Mining Congress.
American Museum of Safety.
American Peat Society.
American Portland Cement Manufacturers.
American Railway Engineering Association.
American Society of Civil Engineers.
American Society of Engineering Contractors.
American Society of Mechanical Engineers.
American Society of Naval Engineers.
American Wood Preservers' Association.
Annales de Mines, France.
Anode.
Argentine Sociedad Cientifica.
Arizona Mine Inspector.
Arizona State Bureau of Mines.
Arizona State Geological Survey.
Arkansas Bureau of Mines.
Arkansas Geological Survey.
Association of Engineering Societies.
Association of Mining Electrical Engineers, England.
Association of Railway Electrical Engineers.
Atti del Colegro degli Ingenerio Ed Architetti.
Australian Coal & Iron Trade Review, Sydney.
Australasian Institute of Mining Engineers.
Australian Mining Standard, Melbourne.

B

Belgium Annales des Mines.
Berg, Hütten & Salinenwesen in preusischen Staate, Germany.
Berg- und Huttenwesen, Germany.
Berg- und Hüttenmännische Rundschau, Kattowitz, Germany.
Berg und Hüttenm, Jahrb, Leoben-Pribram.
Bergbau, Germany.
Bergrecht, Germany.
Bergwerks-Zeitung, Germany.
Bergwerkschaftliche Mitteilungen, Germany.
Birmingham Metallurgical Society, England.
Bitumen, Germany.
Black Diamond.
Bolivia Geological & Geographical Boletin.
Braunkohle, Germany.
Brick & Clay Record.
British Columbia Bureau of Mines.
British Columbia Mining Exchange & Engineering News, B. C.
British Guiana Institute of Mines and Forests.
British Institute of Metals.

C

Cairo Scientific Society.
California Derrick.
California Miners' Association.
California State Mining Bureau.
Canada Department of Mines.
Canada Geological Survey.
Canadian Engineer.
Canadian Mining Institute.
Canadian Mining Journal.
Cassier's Magazine.
Cement.
Centralblatt der Hütten & Walzwerke, Berlin, Germany.
Chemical Engineer.
Chemical Metallurgical & Mining Society of South Africa.
Chemiker-Zeitung, Germany.
Chemiker & Techniker-Zeitung, Austria.
Chemist-Analyst.
Chile Institute de Ingenieros.
Cleveland Engineering Society.
Coal Age.
Coal Mining Institute of America.
Coal Trade Bulletin.
Coal & Coke Operator.
Colliery Guardian, London.
Colorado Geological Survey.
Colorado School of Mines.
Colorado Scientific Society.
Colorado State Bureau of Mines.
Colorado University.
Colombia Department de Antioquia.
Columbia School of Mines Quarterly.
Compressed Air Magazine.
Concrete-Cement Age.
Connecticut State Geological & Natural History Survey.
Cornwall Mining Association and Institute, England.
Cuerpo de Ingenieros de Minas del Peru, Peru.

D

Der Erzbergbau, Germany.
Deutsche Technik, Germany.
Die Fördertechnik, Germany.
Domestic Engineering.

E

Economic Geology.
Edinburgh Geological Society, Scotland.
Eisen Zeitung, Germany.
El Economista Mexicana, Mexico.
El Petrolero Mexicana, Mexico.
Electrical Engineer, London.
Electrical Review, London.
Electrical Review & Western Electrician.
Electrician, London.
Elektrochemie, Germany.

Electrotechnik & Maschinenbau, Austria.
Elektroschemische Zeitschrift, Germany.
Engineering Association of New South Wales, Australia.
Engineering, London.
Engineering Magazine.
Engineering Review, London.
Engineering & Contracting.
Engineering & Mining Journal.
Engineers' Club.
Enginers' Society of Eastern Pennsylvania.
Engineers' Society of Western Pennsylvania.
English Ceramic Society, England.
Excavating Engineer.

F

Faraday Society, London.
Federated Malay States Mines Report.
Fer et Acier, France.
Ferrum, Aachen, Germany.
Florida State Geological Survey.
Fördertechnik, Germany.
Foundry.
Franklin Institute.
Fuel Oil Journal.

G

General Electric Review.
Geological Society of America.
Geological Society of Tokyo, Japan.
Geological Society of Washington, D. C.
Georgia Geological Survey.
Gesamte Schiss & Sprengstoffwesen, Germany.
Giesserei Zeitung, Germany.
Glückauf, Germany.
Great Britain Geological Survey.

I

Idaho State Inspector of Mines.
Ideal Power.
Illinois Bureau of Labor Statistics.
Illinois State Geological Survey.
Illinois State Mining Board.
Illinois Miners' Mechanics Institute.
Illinois University.
Imperial Institute.
India Geological Survey.
India Mining & Geological Institute.
Indian & Eastern Engineer.
Indiana Department of Geology & Natural Resources.
Indust. Chimica, Minerar. e Metallurg., Italy.
Industrial Advocate, Nova Scotia.
Industrial Engineering & Engineering Digest.
Ingot.
Ingeneria y Contratista.
Ingeneria, Spain.
Institute of Engineers & Ship Builders, Scotland.
Institute of Marine Engineers, England.
Institution of Mining Engineers, London.
Institution of Mining & Metallurgy, London.
International Congress for Radiology & Electrology.
International Railway Fuel Association.
International Institute of Technical Bibliography.
Internationalen Vereines der Bohringenieure & Bohrtechniker, Austria.
Iowa Engineer.
Iowa Geological Survey.
Iowa Mine Inspectors.
Iowa State College Engineering Experiment Station.
Iowa University.
Iron Age.
Iron Trade Review.
Iron & Coal Trades Review, London.
Iron & Steel Institute, London.

J

Jern Kontorets Annaler, Sweden.
Journal du Four Electrique et de l'Electrolyse, France.
Journal du Petrole, France.
Journal of Electricity, Power & Gas.
Journal of Geology.
Journal of Industrial & Engineering Chemistry.

K

Kali, Erz & Kohle, Germany.
Kali, Halle, Germany.
Kansas Mine Inspector.
Kansas University Geological Survey.
Kentucky Department of Mines.
Kentucky Geological Survey.
Kentucky Mining Institute.
Kentucky University.
Kohle & Erz, Germany.
Kohleninteressent, Germany.
Kunstdünger Industrie, Germany.

L

La Metallurgie du Nord, France.
Lackawanna Chemical Society.
Lake Superior Mining Institute.
Le Pétrole, France.
Le Phosphate, France.
Levant Trade Review, Turkey.
Liverpool Geological Association, England.
L'Opinion Financiere, France.
Los Angeles Chamber of Mines & Oil.
Louisiana Geological Survey.

M

Madrid Cientifico, Spain.
Malayan Tin & Rubber Journal, F. M. S.
Manchester Association of Engineers, England.
Manchester Mining & Geological Society England.
Marine Review.
Maryland Geological Survey.
Maryland Mine Inspector.
Mechanical World, England.
Mensuel de L'Association Amicale.
Metal und Erz, Halle, Germany.
Metaux et Alliages, France.
Metallurgia Italiara, Italy.
Metallurgical & Chemical Engineering.
Metallurgie & Construction Mechanique, France.
Metallurgie, Germany.
Mexicana Sociedad Geologica.
Mexican Institute of Mining & Metallurgy Mexico.
Mexican Mining Journal.
Michigan Geological Survey.
Midland Institute of Mining, Civil & Mechanical Engineers, England.
Mine Inspectors' Institute of U. S.
Mine, Quarry & Derrick.
Mining American.
Mining Engineering, London.
Mining Engineering & Electrical Record, B. C.
Mining Institute of Scotland.
Mining Journal, London.
Mining Magazine, London.
Mining, Oil & Engineering Review.
Mining Society of Nova Scotia.
Mining World & Engineering Record, London.
Mining & Engineering Review, Australia.
Mining & Engineering World.
Mining & Geological Institute of India.
Mining & Metallurgical Society of America.
Mining & Oil Bulletin.

Mining & Scientific Press.
Minnesota Geological & Natural History Survey.
Minnesota School of Mines.
Minnesota University.
Mississippi Geological Survey.
Missouri Bureau of Geology and Mines.
Missouri Geological Survey.
Missouri School of Mines.
Mois Mimier et Metallurgique, France.
Montan-Zeitung für Oesterreich-Ungarn und die Balkanländer, Austria.
Montana Bureau of Agriculture, Labor & Industry.
Montana Inspector of Mines.
Montanistische Rundschau, Germany.
Municipal Engineer.

N

National Academy of Sciences.
National Association of Chemical Industry.
National Association of Colliery Managers, London.
National Association of Stationary Engineers.
National Geographic Magazine.
National Lime Manufacturers' Association.
Natural Gas Journal.
Nevada Inspector of Mines.
Nevada University.
New Jersey Geological Survey.
New South Wales Engineering Association.
New York Geological Survey.
New Zealand Geological Survey.
New Zealand Institute.
North Carolina Geological Survey.
North of England Institute of Mining & Mechanical Engineers.
North Staffordshire Institute of Mining & Mechanical Engineers.
Nova Scotia Mining Society.

O

Oesterreichische Zeischrift für Berg- und Huttenwesen, Vienna, Austria.
Ohio Geological Survey.
Oil Age.
Oil & Gas Journal.
Oil & Mining Bulletin.
Oildom.
Oklahoma Geological Survey.
Ontario Bureau of Mines.
Oregon Mineral Resources.
Oregon University.

P

Pahasapa Quarterly.
Pan American Union.
Penn State Mining Quarterly.
Pennsylvania Mines Department.
Pennsylvania Topographic & Geologic Survey.
Peru Engineer of Mines.
Peru Today, Lima.
Pétrole, France.
Petroleum, Germany.
Petroleum World, London.
Pfalz-Saarbrücker Bezirksvereins Deutscher Ingenieure, Germany.
Philadelphia Engineers' Club.
Philippine Journal of Science, Manila.
Pittsburgh University.
Popular Mechanics.
Popular Science Monthly.
Power.
Practical Electricity & Engineering.
Practical Engineer.
Praktische Geologie, Germany.

Q

Quebec Bureau of Mines.
Quebec Department of Colonization, Mines & Fisheries.
Queensland Geological Survey.
Queensland Government Mining Journal.

R

Radium.
Rassegna Mineraria Metallurgica e Chimica, Italy.
Reclamation Record.
Resoconti delle Riunioni Association, Italy.
Retail Coalman.
Revista Minera e Industria de Linares, Spain.
Revista Minera Metallurgica y de Ingenieria, Spain.
Revista Petrolera, Mexico.
Revue de Metallurgie, France.
Revue des Matériaux de Construction, France.
Revue d'Electrochimie et d'Electrometallurgie, France.
Revue Industrielle du Centre, France.
Revue Noire, France.
Revue Practique des Industries Metallurgiques, France.
Rhodesia (Southern) Mines Department.
Rhodesian Chamber of Mines, Bulawayo.
Rigasche Industrie, Russia.
Rock Products.
Royal Geological Society of Cornwall, England.
Royal Society of Arts Journal, London.
Royal Society of Canada.

S

Salt Lake Mining Review.
Schiess & Sprengtoffwesen, Germany.
Science & Art of Mining, England.
Science Conspectus.
Sibley Journal of Engineering.
Slate Trade Gazette, England.
Smithsonian Institution.
Société Amicale des Anciens Élèves de l'École des Maitres-Mineurs de Douai, France.
Société Chimique de Belgique, Belgium.
Société des Ingénieures Civils de France.
Society of Arts, London.
Society of the Chemical Industry, London.
South Africa Engineering, London.
South Africa Geological Survey.
South African Association of Engineers.
South African Institute of Electrical Engineers.
South African Mining Journal.
South Australia Department of Mines.
South Carolina Geological Survey.
South Dakota Engineering Society.
South Dakota Geological Survey.
South Dakota Inspector of Mines.
South Dakota School of Mines.
South Staffordshire & Warwickshire Institute of Mining Engineers, England.
South Wales Institute of Engineers, Wales.
Staffordshire Iron & Steel Institute, England.
Stahl und Eisen, Germany.
Steam.
Stone Trade Journal.
Südwestdeutsche Industrie Zeitung, Prussia.
Sydney University Engineering Society.

T

Technische Blätter, Essen-Ruhr, Germany.
Technische Centralanzeiger, Germany.

Tech. du Nord de la France.
Tennessee Department of Mines.
Tennessee Resources.
Tennessee State Geological Survey.
Teniente Topics, Chile.
Texas University.
Texas University Mineral Survey.
Tonindustrie Zeitung, Berlin, Germany.
Transvaal Chamber of Mines, Johannesburg.

U

United States Bureau of Mines.
United States Bureau of Standards.
United States Consular Reports.
United States Department of Commerce and Labor.
United States Geological Survey.
United States National Museum.
Utah Bureau of Immigration, Labor & Statistics.

V

Vancouver, B. C., Chamber of Mines.
Vereines Deutscher Ingenieure, Germany.
Vermont Geological Survey.
Victoria Chamber of Mines, Australia.
Virginia Geological Survey.

W

Washington (D. C.) Academy of Scier
Washington Geological Survey.
West Australia Chamber of Mines.
West Australia Geological Survey.
West Australia Institution of Engineers
West Australian Mining, Building & gineering Journal, Kalgoorlie.
West of Scotland Iron & Steel Institu
West Virginia Department of Mines.
West Virginia Geological Survey.
West Virginia Mining Association.
Western Chemist & Metallurgist.
Western Engineering.
Western Society of Engineers.
Wisconsin Engineer.
Wisconsin Geological & Natural Hist Survey.
Wisconsin University.
Wood Preserving.
Wyoming Geological Survey.

Y

Yale Scientific Monthly.

Z

Zentral Verbandes der Bergbau Betri sleiter, Bohemia.

EXPLANATIONS AND ABBREVIATIONS

The entries show:

(1) The author of the article.

(2) A dash if the name is not apparent.

(3) The title, in italics, of the article or book. Titles in foreign languages are ordinarily followed by a translation or explanation in English.

(4) When the original title is insufficient a brief amplification is added. This addition is in brackets.

(5) The journal in which the article appeared; also the date of issue, and the page on which the article begins.

(6) Approximate number of words. Illustrated articles are indicated by an asterisk (*).

(7) The price. Articles mentioned will be supplied to subscribers of Mining and Engineering World and others at the prices quoted. Two-cent postage stamps will be accepted on orders less than $1. Subscribers will be allowed a discount of 5 cts. if the price of the article exceeds 50 cts.

NOTE.—When there is more than one author to an article, only the first named appears in alphabetical arrangement, the others appearing, however, on the page or pages designated in author's index.

Subjoined is a list of the commoner abbreviations found in this work. They are used chiefly in the names of periodicals, and of associations. The abbreviations will be found easily intelligible at sight, and are what they purport to be—self-explanatory abbreviations, not symbols.

Abst.—Abstract.
Acad.—Academy; Académie; Accademia.
Adv.—Advance.
Afr.—Africa; African.
Akad.—Akademie.
Allgm.—Allgemeine.
Amer.—American.
A. I. M. E.—American Institute Mg. Eng.
Archts.—Architects.
Assn.—Association.
Ber.—Berichte.
Bol.—Boletin; Boletim; Bollettino.
Bull.—Bulletin.
Bur.—Bureau.
Centralbl.—Centralblatt.
C-R.—Compte-Rendu; Resoconti.
Chap.—Chapter.
Chem.—Chemical.
Chemy.—Chemistry.
Coll.—College.
Colly.—Colliery.
Cong.—Congress.
Conv.—Convention.
d.—des (French and German).
Dept.—Department.
Deu.—Deutsche, etc.
Econ.—Economic.
Ed.—Editorial.
Elect.—Electrical.
Engg.—Engineering.
Engr.—Engineer.
Engrs.—Engineers.
Ext.—Extract.
f.—for; für.
Gaz.—Gazette.
Geol.—Geology.
Geolog.—Geological.
Ges.—Gesellschaft.
Govt.—Government.
Hüttenm.—Hüttenmännische.
Ind.—Industrial; Industriel; Industrielle.
Ingr.—Ingenieure, Ingenieros.
Inst.—Institute; Institut; Instituto.
Instn.—Institution.
Intl.—International.
Jahresber.—Jahresbericht.
Jahrb.—Jahrbuch.
Jnl.—Journal.
Mag.—Magazine.
Mech.—Mechanical.
Met.—Metallurgy.
Metl.—Metallurgical.
Mex.—Mexican.
Mfrs.—Manufacturers.
Mg.—Mining.
Min.—Mineral.
Mittlngn.—Mitteilungen.
Oestr.—Oesterreichische; Oesterreich.
Proc.—Proceedings.
Quart.—Quarterly.
Rec.—Record.
Rept.—Report.
Res.—Resources.
Rev.—Review; Revue; Revista.
Sci.—Science; Sciences.
Scient.—Scientific.
Soc.—Society; Société; Società.
Suppl.—Supplement; Supplementary.
Surv.—Survey.
Tech.—Technology.
Trans.—Transactions.
Ver.—Verein.
Verb.—Verband.
Verh.—Verhandlungen.
Univ.—University.
Zentralbl.—Zentralblatt.
Ztg.—Zeitung.
Zts.—Zeitschrift.

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PART I.

GEOLOGY AND MINERALOGY.

CHAPTER I.

MINING GEOLOGY, ORE GENESIS AND MINERALOGY.

GEOLOGY.

Allan, J. A.—*Geology of Field Map-Area, British Columbia and Alberta.* [A very complete description of the geology of the area is given. To date the lead-zinc-silver and copper deposits are of no noted importance, though some properties are operating there].—Canadian Geol. Surv. Memoir 55; pp 312*.

Allen, R. C.; Barrett, L. P.—*Contributions to the Pre-Cambrian Geology of Northern Michigan and Wisconsin.* [This section is of little real importance to economic mining].—Mich. Geol. Surv. Pub. 18; Geol. Ser. 15; pp 164*.

Alsdorf, P. R.—*Occurrence, Geology and Economic Value of the Pitchblende Deposits of Gilpin County, Colorado.* [Radium is the principal economic mineral and uranium oxide the main constituent. The deposits and operation of the same are described].—Eco. Geol. May 1916; p 266; pp 13; 60c.

Andrews, E. C.—*Canbelego, Budgery and Budgerygar Mines, New South Wales.* [Part II on the gold and copper fields, Cobar, New South Wales].—N. S. W. Geol. Surv. Sydney, Aust.

Ball, L. C.—*Lowmead No. 1 Bore and the Tertiary Oil-Shales of Baffle Creek, Australia.* [Abst. from a report of the Australian Geol. Surv.].—Queen. Govt. Mg. Jnl. Jan. 15 1916; p 13; pp 3¾*; 35c.

Bastin, E. S.; Hill, J. M.—*Preliminary Report on the Economic Geology of Gilpin County, Colorado.* [On the geology of the formation and genesis of ores of gold, copper, uranium, tungsten and titanium].—U. S. G. S. Bull. 620-M; pp 28*.

Beckett, P. G.—*The Water Problem at the Old Dominion Mine, Arizona.* [Geology is described as related to water seepage. Pumping, including air-lifts, is then taken up and systems and methods of detailed operations described].—Bull. A. I. M. E. April 1916; p 679; pp 32*; 35c.

Berg, G.—*Das Magneteisenerzvorkommen von Kittilä in Finnisch-Lappmarken.* [The geology and genesis of the magnetite deposits in Finnish-Lapland].—Glückauf Jan. 15 1916; p 45; pp 5*; 50c.

Brinsmade, R. B.—*The Contact Mines of Vera Cruz.* [The geology of the formation is taken up with a general description of the country. Descriptions of different types of ore-bodies are then given and some information on historic operation of the mines].—Mex. Mg. Jnl. April 1916; p 119; pp 3*; 35c.

Brodie, W. M.—*Metallurgy of Native Silver Ores in Southwestern Chihuahua, Mexico.* [A paper read before the Pan-American Scientific Cong. History, smelting, concentrating, cyaniding, amalgamation, occurrence and crushing are taken up].—E. & M. J. Feb. 12 1916; p 297; pp 5*; 25c.

Brokaw, A. D.; Smith, L. P.—*Zonal Weathering of a Hornblende Gabbro.* [Gabbro is a basic rock and is more easily altered than those of a more acid nature as the granites].—Jnl. of Geol. Mar. 1916; p 200; pp 6*; 75c.

Burrows, A. G.—*The Porcupine Gold Area.* [From a report by the Ontario Bureau of Mines. Early prospecting, together with history and geology, are brought out].—Canadian Mg. Jnl. Feb. 15 1916; p 93; pp 3¼; 35c.

Butler, B. S.; Heikes, V. C.—*Notes on the Promontory District, Utah.* [Geology shows quartzite, shale and limestone formation and there are copper, lead and zinc deposits].—U. S. G. S. Bull. 640-A; pp 10*.

Butts, Charles.—*Structure of the Southern Part of Cumberland County, Tennessee, in Relation to the Possible Occurrence of Oil and Gas.* [Includes a description of the formation and topography of the country].—Resources of Tenn. April 1916; p 107; pp 4*.

Cairnes, D. D.—*Upper White River District, Yukon.* [Speaks of the geography of the country, its routes of travel and a complete review of the geology and ore

deposits. Gold, coal and copper make up the economic deposits of the country].—Canada Geol. Surv. Memoir 50; pp 191*.

Carnahan, T. S.—*Underground Mining Methods of Utah Copper Co., Utah.* [Describes the geology of the body, methods of stoping, construction of chutes, haulage, costs, supports, etc.].—A. I. M. E. Bull. Jan. 1916; p 51; pp 14*; 35c.

Case, E. C.; Robinson, W. I.—*The Geology of Limestone Mountain and Sherman Hill in Houghton County, Michigan.*—Mich. Geol. Surv. Pub. 18; Geol. Ser. 15; pp 17*.

Clarke, E. C.—*Geology and Mining at Sandstone and Hancock's, East Murchison Goldfield, Australia.*—W. Aust. Geol. Surv., Perth; Bull.; $1.

Clarke, F. W.—*The Data of Geochemistry.* [A complete treatise on the chemical composition, etc., of rocks, minerals and other substances allied with geology].—U. S. G. S. Bull. 616; pp 821.

Cole, F. L.—*Antimony in China.* [A description of the history of the industry, the nature and occurrence of the ores and methods of smelting the product].—M. & S. P. Mar. 11 1916; p 369; pp 5*; 20c.

Collins, W. H.—*Age of the Killarney Granite, Ontario.* [The area covered is just north of Lake Huron and is of no economic value. The report was made to help co-relate this formation with the formation which is known in districts to the north].—Canada Dept. of Mines; Museum Bull. No. 22; pp 12*.

Condit, D. D.—*Structure of the Berea Oil Sand in the Summerfield Quadrangle.* [These are among the most important producing sands of U. S. Their geology and quality of the product are described].—U. S. G. S. Bull. 621-N; pp 15*.

Condit, D. D.—*Structure of the Berea Oil Sand in the Woodsfield Quadrangle.* [This includes Belmont, Monroe, Noble and Guernsey counties in Ohio].—U. S. G. S. Bull. 621-O; pp 17*.

Cox, G. H.; Dake, C. L.—*Geological Criteria for Determining the Structural Position of Sedimentary Beds.* [Various marks left on sedimentary deposits are taken up with some structural phenomena of igneous rocks].—Bull. Mo. School of Mines; May 1916; pp 59*.

Crampton, F. A.—*Platinum at the Boss Mine, Goodsprings, Nevada.* [A very complete description on the geology of the deposit at this mine and in general for the district].—M. & S. P. April 1 1916; p 479; pp 3¼*; 20c.

Daly, R. A.—*Geology of the Kiruna District, Sweden.* [Brings out a theory other than magmatic segregation of the deposits in the quartz porphyry].—Eco. Geol. May 1916; p 294.

Doelter, C.—*Ueber die Genesis einiger Oesterreichisch-Ungarischer Kupferkieslagerstätten.* [The geology and genesis of a chalcopyrite deposit in Austria].—Montanist. Rund. Jan. 16 1916; p 29; pp 3½*; 35c.

Donnelly, T. F.—*Copper Deposits of San Cristobal, Santa Domingo, California.* [A paper read before the A. I. M. E.].—Mex. Mg. Jnl. Jan. 1916; p 8; pp 2; 35c.

Down, T. A.—*Tin and Tungsten in Portugal.* [The results of some sampling and drilling are brought out, and with them the geology is described, as also is their methods of concentration].—Mg. Mag. Jan. 1916; p 19; pp 6*; 50c.

Drysdale, C. W.—*Geology and Ore Deposits of Rossland, British Columbia.* [General and economic geology are reviewed in detail. Separate descriptions of mines are given and part II is on physiography of the district].—Canadian Geol. Surv. Mem. 77; pp 317*.

Eckel, E. E.—*Iron Ores: Their Occurrence, Valuation and Control.*—[Does not discuss the ores from a geological view only but speaks also of the relation they bear to the industry].—McGraw-Hill; pp 430*; $4.

English, W. A.—*Geology and Oil Prospects of Cuyama Valley, California.*—[Describes the geology of the district and structure of the formation].—U. S. G. S. Bull. 621-M; pp 25*.

Estep, H. Cole.—*Iron Mining on the Menominee Range, Michigan.* [Brings out history of the Porter lands and describes the geology, nature of the deposits and origin].—I. Tr. Rev. Jan. 20 1916; p 179; pp 6*; 25c.

Fearnsides, W. G.—*Some Effects of Earth Movement on the Coal Measures of the Sheffield District.* [A paper read before the Midland Inst. on Mining, Civil and Mechanical Eng.].—I. & C. Tr. Rev. June 2 1916; p 630; pp 2*; Coll'y Guard. June 2; p 1039; pp 1½*; June 9; p 1088; pp 2*; 70c.

Feldtmann, W. R.—*The Mines of Ashanti Goldfields Corporation, West Africa.* [The history, methods of mining geology and origination of the company are given. These arsenical ores must first be roasted and are then cyanided].—Mg. Mag. May 1916; p 257; pp 12*; 50c.

Fitch, R. S.; Loughlin, G. F.—*Wolframite and Scheelite at Leadville, Colorado.* [The geology of the formation containing these minerals is described,

and the mineralogy and occurrence of the minerals taken up separately; from Eco. Geol.].—Mg. World June 3 1916; p 1089; pp 1¾; 10c.

Freeman, O. W.—*Gold Mining in the Judith Mountains, Montana.* [Briefs are given on some of the plants and mines. The geology and genesis of the ores and formation containing them is given with a general topographic description of the country].—M. & S. P. June 10 1916; p 863; pp 2½*; 20c.

Glasgow, J. W.—*Tungsten Mining at Atolia, California.* [Describes the history of the industry and occurrence of the ores].—Mg. & Oil Bull. Jan. 1916; p 31; pp 2*; 25c.

Godfrey, J. R.—*The Arlethan Tinfield, N. S. W., Australia.* [Abst. from a N. S. W. Geological Survey report].—Mg. & Engg. Rev. Jan. 5 1916; p 93; pp 2; 35c.

Gregory, Herbert E.—*A Geologic Reconnaissance of the Cuzco Valley, Peru.* [A contribution to the complete treatise on the geology, geography, topography, etc., of this nearly untouched district].—Amer. Jnl. of Sci. Jan. 1916; p 1; pp 100*; $1.10.

Gregory, H. E.—*Garnet Deposits on the Navajo Reservation, Arizona and Utah.* [Geology, distribution and occurrence are the principal items of the article].—Eco. Geol. May 1916; p 223; pp 8*; 60c.

Gregory, J. W.—*Geology of Today.* [Is a book of the usual type of text covering the entire subject in a brief way for each of its subdivisions].—Seeley, Service & Co., London; book.

Gudgeon, C. W.—*The Scheelite-Gold Mines of Otago, New Zealand.* [The geology is taken and several properties described. Mill flow-sheets and milling and mining costs are given, besides a brief on a wet method for assaying pyritic scheelite for tungsten].—Proc. Aus. Inst. M. E.; N. S. No. 21 1916; p 37; pp 14*; 65c.

Haggen, E. A.—*Surf Inlet Mine, British Columbia.* [Describes the formation, ore bodies and items of financial interest].—Mg. Engg. & Elect. Rec. Dec. 1915; p 197; pp 4¾*; 35c.

Haynes, W. P.—*The Lombard Overthrust and Related Geological Features.* [The area considered includes the greater portion of land at the head-waters of the Missouri river in Montana].—Jnl. of Geol. May 1916; p 269; pp 21*; 75c.

Hewett, D. F.—*Some Manganese Mines in Virginia and Maryland.* [Most of the important mines are described separately. Four types of deposits are described as regards their geology and genesis].—U. S. G. S. Bull. 640-C; pp 95*.

Higgins, W. C.—*Mine and Mill of Bannack Gold Mining Co., Utah.* [A description of the deposit and mine workings. The mill has a continuous, counter-current decantation].—S. L. Mg. Rev. May 15 1916; p 17; pp 4½*; 25c

Higgins, W. C.—*The McAlpine Mine on the Great Mother Lode.* [History, geology and equipment of this mine which was discovered before 1855].—S. L. Mg. Rev. Mar. 15 1916; p 15; pp 3*; 25c.

Hinds, Henry; Greene, F. C.—*The Stratigraphy of the Pennsylvanian Series in Missouri.* [Purely geological and does not include any formation carrying minerals].—Mo. Bur. of Geol. Vol. XIII; Ser. 2; pp 407*.

Hodge, J. M.—*Coals of the North Fork of Kentucky River in Brethitt and Perry Counties, Kentucky.* [Each bed is taken separately and described. The subdivision of the area is very complete, so that a good detailed description is made].—Ky. Geol. Surv., Ser. III, Vol. IIII; pp 409.

Hoffman, J. D.—*The Bawdwin Mines, Burma, India.* [The mines are in the northern part of the province. They produce lead, silver and zinc as a complex ore. The history, geology, development of the mines and a brief on the treatment of the ore are given].—Mg. Mag. Mar. 1916; p 139; pp 8*; 50c.

Hopkins, P. E.—*Kowkash Gold Area, Ontario.* [A general and geological description of the district in western Ontario where gold is the mineral which caused a rush to the district. Iron formation is also present].—Ont. Bur. of Mines; Bull. 27; pp 15*. Abst. in Canadian Mg. Jnl. April 15 1916; p 181; pp 4*; 35c.

Hore, R. E.—*Mineral Resources of Michigan.* [Tables on the production and values of mineral products. Also a complete geological review of the copper deposits].—Mich. Geol. Surv. Lansing; Pub. 19, Ser. 16; pp 351*.

Hore, R. E.—*The Canadian Mining Manual.* [An economic geological account of the minerals which are mined or found in Canada. Reports are then given of most of the Canadian mining companies, which are arranged alphabetically].—Mines Pub. Co., Toronto; book; pp 432*; $2.50.

Hotchkiss, W. O.; Bean, E. F.; Wheelwright, O. W.—*Mineral Land Classification, Wisconsin.* [A geological reconnoissance of an area of pre-Cambrian rocks which are supposed to carry de-

posits of iron].—Wis. Geol. & Nat. Hist. Surv. Bull. 64; pp 378*.

Howard, L. O.—*Geology of the Cottonwood Districts, Utah.* [A lengthy description of the formation, topography and geological structure].—M. & S. P. April 15 1916; p 557; pp 5½*; 20c.

Howard, L. O.—*Ozokerite in Utah.* [A brief review of the deposits is made and a description of the methods of refining the raw product are given. Some of the deposits and operating properties are described].—M. & S. P. June 17 1916; p 907; pp 4½*; 20c.

Jenkins, O. P.—*Phosphates and Dolomites of Johnson County, Tennessee.* [A description of the formation in which the phosphate rocks occur and analyses of the phosphate rocks with short descriptions of properties now operating].—Resources of Tenn. April 1916; p 51; pp 56*.

Jones, W. R.—*Mineralization in Malaya.* [A detailed description of the ore-bearing formation and theories of their origin and that of the ores contained therein].—Mg. Mag. Dec. 1915; p 322; pp 9*; 50c.

Kay, F. H.; White, K. D.—*Coal Resources of District VIII, Danville, Illinois.* [Geological structure and formation and detailed results of drilling and description of all the coal seams in the district covered].—Illinois Geol. Surv.; Bull. 14; pp 68*.

Krusch, P.—*Das Campine-Kohlengebiet und Seine Beziehungen zu den Uebrigen Steinkohlenbrecken Belgiens und Nordwesteuropas.* [An account of the Campine coal fields and their relation to those ot Belgium and northwest Europe. Geology, analyses and petrography of the formation and coal are given].—Glückauf Dec. 18 1915; p 1229; pp 6; 50c.

Krusch, Dr.—*Die Kupfervorkommen von Vastveit am Tinsjö und Einige Andere in Telemarken, ein Beitrag zur Genesis der Kupfer-Reichsulphide.* [On the genesis and geology of the copper deposits in the country to the north of Germany].—Metall & Erz Jan. 8 1916; p 1; pp 11*; 35c.

Krusch, D. P.—*Die Nutzbaren Lagerstätten Serbiens und Ihre Wirtschaftliche Bedeutung für die Zentralmächte.* [On the economic mineral deposits of Serbia].—Metall & Erz Feb. 22 1916; p 69; pp 9*; 35c.

Krusch, P.—*The Campine Coal Fields, Belgium.* [Abst. from Glückauf. A geological treatise showing its relation to other coal fields of Belgium and northwestern Europe].—Coll'y Guard. Feb. 25 1916; p 357; pp 2*; Mar. 3; p 405; pp 3*; Mar. 10 1916; p 454; pp 1⅛; $1.05.

Lee, W. T.—*The Aztec Gold Mine, Baldy, New Mexico.* [The property produced in 1870 and recently it has been reopened by the discovery of more rich ore in it. A general geological description of the property is given].—U. S. G. S. Bull. 620-N; pp 6*.

Lindgren, Valdemar.—*Gold and Silver Deposits in North and South America.* [A paper read before the Pan-American Scientific Soc. Localities are taken separately. Their gold and silver production discussed as regards their production and distribution of ores].—Bull. A. I. M. E. April 1916; p 721; pp 26; 35c.

Livermore, Robert.—*Mining Districts of Northern Ontario.* [A review of the geology, mining and milling in northeastern Ontario, confined mostly to gold and silver].—M. & S. P. Jan. 15, 1916; p 89; pp 3¾*; 20c.

Lupton, C. T.—*Geology and Coal Resources of Castle Valley in Carbon, Emery and Sevier Counties, Utah.* [The land is to be reopened to entries. Coal from 8000 to 14,000 B. T. U. value is found. General geology of the formation and separate descriptions of the different seams are given].—U. S. G. S. Bull. 628; pp 8*; 30c.

Lupton, C. T.—*Oil and Gas Near Basin, Big Horn County, Wyoming.* [A compilation of geological data from which may be ascertained the probabilities of oil in some certain vicinity].—U. S. G. S. Bull. 621-L; pp 34*.

MacDonald, D. F.—*Some Engineering Problems of the Panama Canal in Their Relation to Geology and Topography.* [Takes up structural geology features].—U. S. Bur. of Mines Bull. 86; pp 88*.

Malcolm, Wyatt.—*The Oil and Gas Fields of Ontario and Quebec.* [Treats on the general geology of the provinces and the deposits in detail by the various counties in which they lay].—Canada Geol. Surv. Memoir 81; pp 248.

Mallery, Willard.—*Antimony Veins at Bernice, Nevada.* [Describes the geologic formation and nature of the deposits.]—M. & S. P. April 15 1916; p 556; pp 1; 20c.

Marstrander, R.—*The Mineral Resources of Uruguay, South America* [The country has been exploited but little. Iron-manganese ore is of greatest importance, though gold and copper are found and there is possibilty for lead, silver, coal and petroleum].—Mg. Mag. June 1916; p 315; pp 6*; 50c.

Matson, G. C.—*The Caddo Oil and Gas Field, Louisiana and Texas.* [A general

geological description of the formation and its structure with short, separate descriptions of the different formations found there].—U. S. G. S. Bull. 619; pp 62*; 40c.

Maxwell-Lefroy, E.—*Wolframite Mining in the Tavoy District, Lower Burma.* [Brings out the important points in a detailed manner as regards history, geology, law, concentration of ores and mining in general].—Bull. of Inst. Mg. & Met. London; Dec. 9 1915; pp 18; 50c.

McConnell, R. G.—*Texada Island, British Columbia.* [Complete description of geology of formation and economic geology. Copper is the principal mineral and iron, gold, lime, and clay are produced in lesser quantities].—Canada Dept. of Mines; Memoir 58; pp 111*.

McLennan, J. F.—*Gold-Quartz Replacements in Intrusive Rock.* [On the genesis, geology, etc., of secondary gold-bearing quartz in intrusive rocks].—Mg. World Feb. 19 1916; p 389; pp 3½; 10c.

Mellor, E. T.—*Conglomerates of the Eastern Rand, South Africa.* [A paper read before the Inst. of Mining & Metallurgy].—S. Afr. Engg. Mar. 1916; p 42; pp 2*; 35c.

Mellor, E. T.—*The Conglomerates of the Witwatersrand, South Africa.* [The genesis of the gold ores found in this formation is brought out, as is a geological description of the associated formation].—Bull. Inst. of Mg. & Met., London, No. 137; pp 62*; 50c.

Mellor, E. T.—*The Conglomerates of the Witwatersrand, South Africa.* [A complete and detailed description of the conglomerates bearing gold in this area. Descriptions of the formation and theories regarding the correlation of the same are given. Also the method by which the gold was deposited]. Jnl. Chem. Met. & Mg. Soc. of S. Afr. Feb. 1916; p 144; pp 37*; 85c.

Mellor, E. T.—*The East Rand, South Africa.* [A description of the various geological formation tending to correlate the several reefs in the vicinity].—S. Afr. Mg. Jnl. Jan. 8 1916; p 435; pp 1½; 35c.

Mellor, E. T.—*The Far East Rand.* [A paper to be read to the Geol. Soc. of South Africa. It brings out a correlation of the separate reefs now known].—Mg. Mag. Dec. 1915; p 313; pp 7*; 50c.

Mellor, E. T.—*The Rich Ore Shoots or Patches of the Far East Rand.*—S. Afr. Mg. Jnl. Mar. 25 1916; p 689; pp 1¾*; 35c.

Mercer, J. W.—*Mining in Ecuador.* [A paper read before the Pan-American Scientific Soc. describing the gold mines of Zamura, the only mining province in the country. History, mineralogy and geology are taken up in fair detail].—M. & S. P. Jan. 29 1916; p 161; pp 5*; 20c. E. & M. J. Feb. 19 1916; p 343; pp 3¾; 25c.

Miller, W. G.—*Silver Deposits of the Cobalt District.* [Abst. from a report by the author, who is provincial geologist of Ontario. Considerable history of the camp is given and excellent views showing the nature of the formation are reproduced].—Canadian Mg. Jnl. June 15 1916; p 291; pp 7*; 35c.

Morgan, C. G.—*Strata Contortions in the Forest of Dean, England.* [A paper read before the National Assn. of Colliery Eng.].—I. & C. Tr. Rev. Jan. 21 1916; p 63 pp 1*; 35c.

Morgan, P. G.; Bartrum, J. A.—*Geology and Mineral Resources of the Buller-Mokihimri District, Westport, New Zealand.* [These are coal fields estimated to contain 110,000,000 tons of bituminous coal].—N. Z. Geol. Surv. Bull. 17.

Morganroth, L. C.—*Pennsylvania Fire Clay.* [Several varieties of clay are found and the more important deposits are described separately as to geology and qualities of the clay].—A. I. M. E. Bull. Feb. 1916; p 475; pp 7; 35c.

Nicholls, H. E.—*The Nature of Nigerian Tin Deposits.* [Discusses the mode of occurrence of cassiterite and does not agree with the theory that the deposits are secondary. Gives examples of the alluvial deposits coming from the weathered granites and lodes].—Mg. Mag. June 1916; p 321; pp 3*; 50c.

Noth, Julius.—*Verbreitung der Erdölzone in den Karpathenländern und die Zukunft der Erdölgewinnung in denselben nach dem Gegenwärtigen Kriege.* [On the geology of the Carpathian oil fields].—Zts. Internat. Vereines Bohringeniure Feb. 15 1916; p 31; pp 3¼*; Mar. 1; p 45; pp 2½*; 70c.

Overbeck, R. M.—*A Metallographic Study of the Copper Ores of Maryland.* [A lengthy review of the geology, genesis, mineralogy, petrology and nature of these deposits].—Eco. Geol. April 1916; p 161; pp 43*; 60c.

Packard, G. A.—*The Gold Lake District, Manitoba, Canada.* [A geological description of the district where recent finds have been made and are being developed, but not as yet proven].—E. & M. J. Feb. 19 1916; p 339; pp 1¾*; 25c.

Palmer, H. S.—*Nomographic Solutions of Certain Stratigraphic Measurements.* [Describes a graphic method for determining the thickness of strata from geo-

logical and topographical data].—Econ. Geol. Jan. 1916; p 14; pp 15*; 60c.

Peterson, F. P.; Flynn, F. H.—*The Walhalla District, South Carolina.* [Gold occurs as leached surface ore and with sulphides. The latter are not of economic value. Geology and mineralogy of the formation and ores are described].—E. & M. J. Feb. 26 1916; p 379; pp 3¼*; 25c.

Petre, R. W.—*Manganese in South Carolina.* [A detailed geological description].—E. & M. J. June 10 1916; p 1019; pp 1¼*; 25c.

Pirsson, L. V.; Schuchert, C.—*A Textbook of Geology.* [A very complete treatise on physical and historic geology with chapters on Clinton iron ore and coal].—Wiley & Son; book; pp 1051*; $4.

Pittman, E. F.—*Geological Map of New South Wales.*—N. S. W. Dept. of Mines, Sydney.

Pogue, J. E.—*The Emerald Deposits of Muzo, Colombia.* [A complete description covering history, geology, production, mineralogy and genesis of the formation and deposits].—Bull. A. I. M. E. May 1916; p 796; pp 24*; 35c.

Porter, C. A.—*A Quick Method of Locating Geological Features.* [Gives a method almost identical with the triangulation method in surveying].—M. & S. P. May 20 1916; p 749; pp ¾*; 20c.

Pratt, W. E.—*Coal in the Philippines.* [Treats on the geology, quality, taxes imposed, mining law and labor].—Coal Age Mar. 18 1916; p 491; pp 6½*; 20c.

Pratt, W. E.—*The Iron Ores of the Philippine Islands.* [The ores were discovered in 1664 and are of the several different varieties. History, genesis of the deposits and geology of the surrounding formation are all taken up in some detail].—A. I. M. E. Bull. Feb. 1916; p 247; pp 16*; 35c.

Pratt, W. E.—*The Occurrence of Petroleum in the Philippines.* [Speaks of several occurrences of petroleum and describes the stratigraphy. Analyses of the oils are given].—Eco. Geol. May 1916; p 246; pp 20*; 60c.

Probert, F. H.—*Surficial Indications of Copper.* [A study of surface geological features which would point to deposits of copper below the surface].—M. & S. P. May 6 1916; p 665; pp 7*; 20c.

Probert, F. H.—*Surficial Indications of Copper.* [Discusses topographic features and shows in what way they indicate the presence of ore. Appearance of the outcrops are considered in a similar way].—M. & S. P. June 3 1916; p 815; pp 6¼*; 20c.

Purdue, A. H.—*Oil and Gas Conditions in the Reelfoot Lake District of Tennessee.* [Structural geology and character of the products found].—Resources of Tenn., State Geol. Surv. Jan. 1916; p 17; pp 20c.

Raefler, E.—*Die Brauneisenerzlagerstätten Oberschlesiens.* [A geological description of the hematite iron-ore bodies in upper Silesia].—Zts. Oberschles. Berg. & Hütten-Vereins April 1915; p 47; pp 24¾*; 50c.

Raefler, F.—*Die Brauneisenerzlagerstätten Oberschlesiens.* [Analyses, geology, mode of occurrence and production statistics are given for the iron fields of upper Silesia, Europe. The ore is hematite and limonite].—Berg & Hütt. Rund. Dec. 5 1915; p 11; pp 7; 35c.

Ransome, F. L.—*Quicksilver Deposits on the Masatzal Range in Arizona.* [Abst. from a U. S. G. S. report giving a general account of the district and its geology].—Mg. World Jan. 8 1916; p 81; pp 1½*; 10c.

Rau, A. E.—*Goldstone District, San Bernardino County, California.* [The geology, topography and nature of the ore deposits and formation is described]. Mg. & Oil Bull. June 1916; p 149; pp 7*; 25c.

Reger, D. B.—*Detailed Report on Lewis and Gilmer Counties, West Virginia.* [Maps accompany the report. Coal, gas and oil are included in this area].—State Geol. Surv., Morgantown, W. Va.; book; pp 660*; $2.

Reinecke, Leopold.—*Ore Deposits of the Beaverdell Map-Area, British Columbia.* [This area has been prospected but little. The ores are gold-bearing chalcopyrite and galena-sphalerite-pyrite silver bearing ores].—Canadian Geol. Surv. Memoir 79; pp 178*.

Rickard, T. A.—*Philip Argall and Metallurgical Progress.* [A review of Mr. Argall's life in the mining field, including experience with gold, tin, copper, etc.].—M. & S. P. Jan. 22 1916; p 119; pp 12*; 20c.

Rickard, T. A.—*Theoretical Considerations Governing the Persistence of Ore in Depth.* [Abst. from a paper read before the Inst. of Mg. & Met., London].—M. & S. P. Jan. 15 1916; p 83; pp 6*; 20c.

Ries, H.; Watson, T. L.—*Engineering Geology.* [A geological study of civil engineers in studying the properties and other features of structural materials].—Wiley & Son; book; pp 722*; $4.

Ritter, E. A.—*Oatman and the Tom Reed-Gold Road Mining District, Arizona.* [A description of the district and

its activities, with a review of the geological formation].—Mg. World April 1 1916; p 645; pp 6*; 10c.

Robinson, H. H.—*The Summation of Chemical Analysis of Igneous Rocks.* [A discussion on the analyzing of rocks and results obtained rather than a description of methods of analysis].—Amr. Jnl. of Sci. Mar. 1916; p 257; pp 9*; 60c.

Ropes, L. S.—*Activities in the Marysville Mining District, Montana.* [Goes into the geology, mining conditions and railroad facilities].—Mg. World April 29 1916; p 819; pp 2¾*; 10c.

Ropes, L. S.—*Observations on Marysville District, Montana.* [Brings out the mineralogical peculiarities and geological peculiarities of the formation in the district].—Mg. World Feb. 19 1916; p 395; pp 1¾; 10c.

Runner, J. J.—*The Geology of Tungsten Deposits.* [On the mineralogical association and pure mineralogy of tungsten deposits].—Pahasapa Qt'ly Feb. 1916; p 13; pp 10*; 35c.

Saint-Smith, E. C.—*Boulder West Mine, Gurrumbah, Queensland.* [A report of the geology and treatment of the ore made by the government].—Queen. Govt. Mg. Jnl. Feb. 15 1916; p 55: pp 2½*; 35c.

Saint-Smith, E. C.—*Devon Wolfram Mine, Near Coolgarra, Queensland.* [Confined to describing the geology of the deposit].—Queen. Govt. Mg. Jnl. Feb. 15 1916; p 57; pp 1¼*; 35c.

Savage, T. E.—*Geologic Structure of Canton and Avon Quadrangles, Illinois.* [A general account of the structural geology].—Illinois Geol. Surv. Bull. No. 33; p 27; pp 10*.

Savage, T. E.; Ross, C. S.—*The Age of Iron Ore in Eastern Wisconsin.* [Oolitic ores occur in the southeastern part].—American Jnl. of Sci. Feb. 1916; p 187; pp 6½*; 60c.

Schneider, E.—*Gussasphalt für Fahrbahnen.* [The mining of asphalt for use in making roads, etc.].—Bitumen Dec. 16 1915; p 247; pp 2½*; 35c.

Schofield, S. J.—*Geology of the Cranbrook Map-Area, British Columbia.* [Copper and silver-lead deposits are most important, though placer and vein gold, and clay are found].—Canada Dept. of Mines; Memoir 76; pp 245*.

Seidl, Kurt.—*Ueber den Verhieb der Kalisalzlagerstätten durch Reinen Versatzbau.* [On the geology and mining methods of salt bodies in Germany. A room and pillar system is used].—Zts. Oberschles. Berg. & Hütten. Vereins Sept. 1914; p 331; pp 13½*; 50c.

Shaw, E. W.; Matson, G. C.; Wegemann, C. H.—*Natural Gas Resources of Parts of North Texas.* [Areas about Fort Worth and Dallas, Tex., and southern and central Oklahoma fields are geologically described. Many topographic maps are shown].—U. S. G. S. Bull. 629; pp 129*.

Shelley, J. W.—*Graphite in Madagascar.* [Takes up geology, prospecting, mining, costs, labor conditions, production, law and a general description of the country and conditions to be found there].—Mg. Mag. June 1916; p 324; pp 7*; 50c.

Singewald, J. T., Jr.; Miller, Benjamin.—*High Grade Manganese Ores of Brazil.* [The deposits of Minas Geraes, their occurrence and methods of operation, with figures on exports to the U. S., are given].—Iron Age Feb. 17 1916; p 417; pp 4*; 30c.

Singewald, J. T., Jr.; Miller, B. L.—*Mining in Oriente Province, Cuba.* [A general description of the country and geology is given. Copper and iron mines are operated. Open-pit methods and flotation treatment of ores are used].—E. & M. J. April 1 1916; p 587; pp 6*; 25c.

Singewald, J. T., Jr.; Miller, B. L.—*The Cerro de Pasco District, Peru.* [On the history of the camp which was originally a silver camp. The geology of the large copper deposits is given the greater preference].—E. & M. J. June 10 1916; p 1015; pp 4*; 25c.

Sperr, J. D.—*The Tom Reed-Gold Road Mining District, Arizona.* [Takes up the general situation in the camp and describes the geology in a brief way].—E. & M. J. Jan. 1 1916; p 1; pp 4¾*; 25c.

Stainier, X.—*The Connection Between the North-Western European Coal Fields.* [Abst. of a paper read before the Manchester, Geol. Soc., England].—Coll'y Guard. Feb. 11 1916; p 263; pp 2⅛; 35c.

Stebinger, E.—*Geology and Coal Resources of Northern Teton County, Montana.* [A consideration of the features which have to do directly with the quality and amount of coal present].—U. S. G. S. Bull. 621-K; pp 40*.

Stephenson, E. A.—*Studies in Hydrothermal Alteration.* [Deals with the action of alkalies in the alteration of silicate minerals as hornblende and feldspars. The work is experimental].—Jnl. of Geol. Mar. 1916; p 180; pp 20*; 75c.

Stewart, A. K.—*The Geology and Mining Activities of Northern Ontario Mining Fields.* [A general review of the numerous camps in which the geology, financial and production figures are brought out.—Mg. World April 15 1916; p 733; pp 8*; 10c.

Stickney, A. W.—*Pyritic Copper Deposits at Kyshtim.* [From Economic Geology. A review of investigations of the deposits giving details on the geology and genesis of the ores, which is by pyritic replacement].—Mg. Mag. Feb. 1916; p 77; pp 8½*; 50c.

Tomlinson, C. W.—*The Origin of the Red Beds.* [Many of our ore deposits are found in this formation in both the north and southwestern states].—Jnl of Geol. May 1916; p 238; pp 15; 75c.

Trowbridge, A. C.; Shaw, E. W.—*Geology and Geography of the Galena and Elizabeth Quadrangles.* [This includes the zinc deposits of the Wisconsin-Illinois district and is accompanied with an account of the history of the development of this section of the country].—Ill. Geol. Surv. Bull. 26; pp 233*.

Uglow, W. L.—*Ore Genesis and Contact Metamorphism at the Long Lake Zinc Mine, Ontario.* [Descriptions of the rocks and minerals, their distribution and genesis are given in connection with a description of the surrounding formation].—Eco. Geol. May 1916; p 231; pp 15*; 60c.

Wagner, P. A.—*Economic Geology and Mineral Industry of South West Africa.* [Principally on the diamond fields].—S. Afr. Mg. Jnl. April 1 1916; p 10; pp 1½; April 22 1916; p 91; pp 1; 70c.

Watts, A. S.—*The Feldspars of the New England and North Appalachian States.* [Contains description of the geology and separate descriptions of the quarries. Tests for the feldspar are given, as are methods of quarrying, pumping, crushing, concentration, etc.].—U. S. Bur. of Mines Bull. 92; pp 181*; 35c.

Wheler, A. S.—*Antimony Production in the Hunan Province, South China.* [A paper read before the Inst. of Mining & Met., London. The deposits, some cost items, methods of contracting and some information on smelting is given].—Mg. World April 8 1916; p 697; pp 2¾; 10c. E. & M. J. April 8; p 637; pp 4¼*; 25c.

White, E. E.—*Analysis of Slate and Dike.* [These formations are hard to distinguish by their physical characters on the iron ranges of Michigan and methods for chemical analysis are here given].—E. & M. J. Mar. 4 1916; p 433; pp 2; 25c.

Williams, M. Y.—*Arisaig-Antigonish District, Nova Scotia.* [A complete geological review of the district where copper, iron, oil-shale, gypsum and limestone are the principal economic deposits].—*Canada Geol.* Surv. Memoir 60; pp 173*.

Woodward, H. P.—Reputed Petroliferous Area of the Warren River District, West Australia.—W. Aust. Geol. Surv. Bull.; $1.

Yeatman, Pope.—*Mine of Chile Exploration Co., Chuquicamata, Chile.* [A paper read before the Pan-American Scientific Cong. History, geology, ore reserves, leaching and the electric power plant are all taken up in fair detail].—E. & M. J. Feb. 12 1916; p 307; pp 6*; 25c.

——— *Summary Report of the Geological Survey, Department of Mines, Canada,* 1915. [In one volume separate reports made during the year on different districts and topics are given].—Canadian Geol. Surv. Sessional Paper 26; pp 307*.

——— *The Cottonwood - American Fork Mining Region, Utah.* [A brief description with a geological map of the district from the U. S. G. S.].—Mg. World Mar. 11 1916; p 521; pp 1¼*; 10c.

——— *Year Book for* 1910 *of the Illinois Geological Survey.* [Includes the Administrative report and various economic geological papers].—Ill. Geol. Surv. Bull. 20; pp 165*.

——— *Zinc Ores, Their Occurrence and Utilization.* [Descriptions of the deposits in various countries are given briefly. Prices of the ore and methods of computing its value are given as well as costs of smelting and methods for the same].—Bull. Imperial Inst., London; p 44; pp 37; 75c.

ORE GENESIS

Bastin, E. S.; Hill, J. M.—*Preliminary Report on the Economic Geology of Gilpin County, Colorado.* [On the geology of the formation and genesis of ores of gold, copper, uranium, tungsten and titanium].—U. S. G. S. Bull. 620-M; pp 28*.

Berg, G.—*Das Magneteisenerzvorkommen von Kittilä in Finnisch-Lappmarken.* [The geology and genesis of the magnetite deposits in Finnish-Lapland].—Glückauf Jan. 15 1916; p 45; pp 5*; 50c.

Clark, J. D.; Menaul, P. L.—*The Role of Colloidal Migration in Ore Deposits.* [A number of experiments made to determine the colloidal properties instigated in metallic particles while in suspension of molten magma and other natural solutions allied to the rock formations].—Econ. Geol. Jan. 1916; p 37; pp 5; 60c.

Daly, R. A.—*Geology of the Kiruna District, Sweden.* [Brings out a theory other than magmatic segregation of the

deposits in the quartz phorphyry].—Eco. Geol. May 1916; p 294.

De Kalb, Courtenay.—*Origin of Nitrate.* [A theoretical description on the genesis of the nitrogen which took part in forming the nitrates which occur in great deposits in Chile mostly].—M. & S. P. May 6 1916; p 663; pp 1½; 20c.

Doelter, C.—*Ueber die Genesis einiger Oesterreichisch-Ungarischer Kupferkieslagerstätten.* [The geology and genesis of a chalcopyrite deposit in Austria].—Montanist. Rund. Jan. 16 1916; p 29; pp 3½*; 35c.

Donnelly, T. F.—*Copper Deposits of San Cristobal, Santa Domingo, California.* [A paper read before the A. I. M. E.].—Mex. Mg. Jnl. Jan. 1916; p 8; pp 2; 35c.

Estep, H. Cole.—*Iron Mining on the Menominee Range, Michigan.* [Brings out history of the Porter lands and describes the geology, nature of the deposits and origin].—I. Tr. Rev. Jan. 20 1916; p 179; pp 6*; 25c.

Hewett, D. F.—*Some Manganese Mines in Virginia and Maryland.* [Most of the important mines are described separately. Four types of deposits are described as regards their geology and genesis].—U. S. G. S. Bull. 640-C; pp 35*.

Hore, R. E.—*Mineral Resources of Michigan.* [Tables on the production and values of mineral products. Also a complete geological review of the copper deposits].—Mich. Geol. Surv. Lansing; Pub. 19, Ser. 16; pp 351*.

Jones, W. R.—*Mineralization in Malaya.* [A detailed description of the ore-bearing formation and theories of their origin and that of the ores contained therein].—Mg. Mag. Dec. 1915; p 322; pp 9*; 50c.

Knight, C. W.—*Origin of Sudbury Nickel Copper Deposits.* [Published by permission of the Provincial Geologist].—E. & M. J. May 6 1916; p 811; pp 2*; 25c.

Krusch, P.—*Das Campine-Kohlengebeit und Seine Beziehungen zu den Uebrigen Steinkohlenbrecken Belgiens und Nordwesteuropas.* [An account of the Campine coal fields and their relation to those of Belgium and northwest Europe. Geology, analyses and petrography of the formation and coal are given].—Glückauf Dec. 18 1915; p 1229; pp 6; 50c.

Mann, R. L.—*Owl Head Manganese Deposit, San Bernardino County, California.* [A description of the deposits with a geological description of the formation and genesis of the ores].—Mg. World April 15 1916; p 743; pp 1¼*; 10c.

McLennan, J. F.—*Gold-Quartz Replacements in Intrusive Rock.* [On the genesis, geology, etc., of secondary gold-bearing quartz in intrusive rocks].—Mg. World Feb. 19 1916; p 389; pp 3½; 10c.

Means, A. H.—*New Mineral Occurrences from the Tintic District, Utah.* [Six new minerals of lead, zinc and bismuth are described and a geochemical treatise is given on their origin].—Amer. Jnl. of Sci. Jan. 1916; p 125; pp 6; $1.10.

Mellor, E. T.—*The Conglomerates of the Witwatersrand, South Africa.* [The genesis of the gold ores found in this formation is brought out, as is a geological description of the associated formation].—Bull. Inst. of Mg. & Met., London, No. 137; pp 62*; 50c.

Mellor, E. T.—*The Conglomerates of the Witwatersrand, South Africa.* [A complete and detailed description of the conglomerates bearing gold in this area. Descriptions of the formation and theories regarding the correlation of the same are given. Also the method by which the gold was deposited]. Jnl. Chem. Met. & Mg. Soc. of S. Afr. Feb. 1916; p 144; pp 37*; 85c.

Nicholls, H. E.—*The Nature of Nigerian Tin Deposits.* [Discusses the mode of occurrence of cassiterite and does not agree with the theory that the deposits are secondary. Gives examples of the alluvial deposits coming from the weathered granites and lodes].—Mg. Mag. June 1916; p 321; pp 3*; 50c.

Overbeck, R. M.—*A Metallurgic Study of the Copper Ores of Maryland.* [A lengthy review of the geology, genesis, mineralogy, petrology and nature of these deposits].—Eco. Geol. April 1916; p 161; pp 43*; 60c.

Pogue, J. E.—*The Emerald Deposits of Muzo, Colombia.* [A complete description covering history, geology, production, mineralogy and genesis of the formation and deposits].—Bull. A. I. M. E. May 1916; p 796; pp 24*; 35c.

Pratt, W. E.—*The Iron Ores of the Philippine Islands.* [The ores were discovered in 1664 and are of the several different varieties. History, genesis of the deposits and geology of the surrounding formation are all taken up in some detail].—A. I. M. E. Bull. Feb. 1916; p 247; pp 16*; 35c.

Siebenthal, C. E.—*Origin of the Zinc and Lead Deposits of the Joplin Region, Missouri.* [Is confined to the genesis of the ores and discussion of the reasons for the theory given. The association of the minerals and enrichment theories are also taken up].—U. S. G. S. Bull. 606; pp 283*.

Singewald, J. T.; Miller, B. L.—*The Genesis and Relations of the Daiquiri and Firmeza Iron-Ore Deposits, Cuba.* [The deposits are of commercial value and have been worked since 1884].—Bull. A. I. M. E. Mar. 1916; p 671; pp 8; 35c.

Singewald, J. T., Jr.; Miller, B. L.—*The Genesis of the Chilean Nitrate Deposits.* [A paper read before the Pan-American Sci. Congress].—Eco. Geol. April 1916; p 103; pp 12; 60c.

Sosman, R. B.—*Types of Prismatic Structure in Igneous Rocks.* [Many theories on the genesis of such structure in large rock bodies are given].—Jnl. of Geol. May 1916; p 215; pp 20*; 75c.

Stickney, A. W.—*Pyritic Copper Deposits at Kyshtim.* [From Economic Geology. A review of investigations of the deposits, giving details on the geology and genesis of the ores, which is by pyritic replacement].—Mg. Mag. Feb. 1916; p 77; pp 8½*; 50c.

Tomlinson, C. W.—*The Origin of the Red Beds.* [Many of our ore deposits are found in this formation in both the north and southwestern states].—Jnl. of Geol. May 1916; p 238; pp 15; 75c.

Uglow, W. L.—*Ore Genesis and Contact Metamorphism at the Long Lake Zinc Mine, Ontario.* [Descriptions of the rocks and minerals, their distribution and genesis are given in connection with a description of the surrounding formation].—Eco. Geol. May 1916; p 231; pp 15*; 60c.

Wagner, P. A.—*Economic Geology and Mineral Industry of Southwest Africa.* [Abst. from a S. Afr. Geol. Surv. Memoir, on the diamond fields and their origin].—S. Afr. Mg. Jnl. April 22 1916; p 91; pp 1; 35c.

Whitehead, W. L.—*The Paragenesis of Certain Sulphide Intergrowths.* [Micro photographs are given and the principal sulphides considered are of copper, though lead and zinc are taken up also].—Econ. Geol. Jan. 1916; p 1; pp 13*; 60c.

———*Dutch Guiana.* [Describes the country, genesis of its large gold deposits, etc.].—Mex. Mg. Jnl. Feb. 1916; p 52; pp 1½; 35c.

——— *Origin of the Joplin Zinc and Lead Deposits, Missouri.* [The genesis of these ores is a thing undecided upon].—Mg. World Jan. 22 1916; p 155; pp ¾; 10c.

MINERALOGY AND PETROGRAPHY

Allen, E. T.—The Composition of Natural Bornite. [Gives analyses and other information on this copper-sulphide mineral].—Amer. Jnl. of Sci. May 1916; p 409; pp 5; 60c.

Brokaw, A. D.; Smith, L. P.—*Zonal Weathering of a Hornblende Gabbro.* [Gabbro is a basic rock and is more easily altered than those of a more acid nature as the granites].—Jnl. of Geol. Mar. 1916; p 200; pp 6*; 75c.

Drysdale, C. W.—*Geology and Ore Deposits of Rossland, British Columbia.* [General and economic geology are reviewed in detail. Separate descriptions of mines are given and part II is on physiography of the district].—Canadian Geol. Surv. Mem. 77; pp 317*.

Farrington, O. C.—*Studies of Brazilian Favas.* [Favas is the name given to a number of rare mineral-stones occurring with diamonds. Analysis and the results of investigation are here given].—Amr. Jnl. of Sci. April 1916; p 355; pp 6; 60c.

Fitch, R. S.; Loughlin, G. F.—*Wolframite and Scheelite at Leadville, Colorado.* [The geology of the formation containing these minerals is described, and the mineralogy and occurrence of the minerals taken up separately; from Eco. Geol.].—Mg. World June 3 1916; p 1039; pp 1¾; 10c.

Jenkins, O. P.—*Phosphates and Dolomites of Johnson County, Tennessee.* [A description of the formation in which the phosphate rocks occur and analyses of the phosphate rocks with short descriptions of properties now operating].—Resources of Tenn. April 1916; p 51; pp 56*.

Lewis, J. V.—*Determinative Mineralogy with Tables for the Determination of Minerals by Means of Their Chemical and Physical Characters.* Wiley & Son; book; pp 155*; $1.50.

Lomax, J.—*Micro-Chemical Examination of Coal in Relation to Its Utilization.* [From a paper read before the Manchester Geological and Mining Soc. The chemical properties as detected by the microscope are brought out, as also are the methods of preparing the slide].—Coll'y Guard. May 12 1916; p 909; pp 1; 35c.

Lord, E. C. E.—*Relation of Mineral Composition and Rock Structure to the Physical Properties of Road Materials.*—U. S. Dept. of Agrict. Bull. 348; pp 26*.

Loughlin, G. F.—*Magnesia in Limestone.* [Speaks of the subject from a mineralogical standpoint and gives information on the genesis of this mineral in limestones].—National Lime Mfg. Assn. Bull. No. 4; pp 11.

McGrigor, G. D.—*Field Analysis of Minerals.* [A number of dry and wet

chemical qualitative tests for distinguishing minerals in the field].—Tech. Bookshop, London; pp 86*; $1.50.

McLennan, J. F.—*Gold-Quartz Replacements in Intrusive Rock.* [On the genesis, geology, etc., of secondary gold-bearing quartz in intrusive rocks].—Mg. World Feb. 19 1916; p 389; pp 3½; 10c.

Means, A. H.—*New Mineral Occurrences from the Tintic District, Utah.* [Six new minerals of lead, zinc and bismuth are described and a geochemical treatise is given on their origin].—Amer. Jnl. of Sci. Jan. 1916; p 125; pp 6; $1.10.

Mercer, J. W.—*Mining in Ecuador.* [A paper read before the Pan-American Scientific Soc. describing the gold mines of Zamura, the only mining province in the country. History, mineralogy and geology are taken up in fair detail].—M. & S. P. Jan. 29 1916; p 161; pp 5*; 20c.

Miller, W. G.—*Silver Deposits of the Cobalt District.* [Abst. from a report by the author, who is provincial geologist of Ontario. Considerable history of the camp is given and excellent views showing the nature of the formation are reproduced].—Canadian Mg. Jnl. June 15 1916; p 291; pp 7*; 35c.

O'Harra, B. M.—*Black Hills Gold-Bearing Iron-Quartz-Tremolite Belt, South Dakota.* [Abst. from a thesis at the South Dakota School of Mines].—E. & M. J. April 29 1916; p 770; pp 3¼*; 25c.

Overbeck, R. M.—*A Metallographic Study of the Copper Ores of Maryland.* [A lengthy review of the geology, genesis, mineralogy, petrology and nature of these deposits].—Eco. Geol. April 1916; p 151; pp 43*; 60c.

Peterson, F. P.; Flynn, F. H.—*The Walhalla District, South Carolina.* [Gold occurs as leached surface ore and with sulphides. The latter are not of economic value. Geology and mineralogy of the formation and ores are described].—E. & M. J. Feb. 26 1916; p 379; pp 3¼*; 25c.

Pogue, J. E.—*The Emerald Deposits of Muzo, Colombia.* [A complete description covering history, geology, production, mineralogy and genesis of the formation and deposits].—Bull. A. I. M. E. May 1916; p 796; pp 24*; 35c.

Purdee, A. H.—*Notes on Manganese in East Tennessee.* [Speaks of the various ores found and places at which they are located. A mineralogical description is also given of the ores and their associated minerals].—Resources of Tenn. April, 1916; *p 111; pp 13.*

Rogers, A. F.—*Sericite, a Low Temperature Hydrothermal Mineral.* [This is a micaceous mineral occurring often in schists and is secondary from the feldspars].—Eco. Geol. April 1916; p 118; pp 33*; 60c.

Runner, J. J.—*The Geology of Tungsten Deposits.* [On the mineralogical association and pure mineralogy of tungsten deposits].—Pahasapa Qt'ly Feb. 1916; p 13; pp 10*; 35c. Abstract in M. & S. P. Mar. 18 1916; p 405; pp 1¾; 20c.

Rutley, Prof.—*Elements of Mineralogy.* [This edition has been revised by H. H. Read].—Thomas Murby Co. London; book; $1.25.

Schaller, W. T.—*Mineralogic Notes, Series III.* [Several new minerals are described. Also new findings in regard to the composition, mineralogy and crystallography of known minerals is given].—U. S. G. S. Bull. 610; pp 164*.

Siebenthal, C. E.—*Origin of the Zinc and Lead Deposits of the Joplin Region, Missouri.* [Is confined to the genesis of the ores and discussion of the reasons for the theory given. The association of the minerals and enrichment theories are also taken up].—U. S. G. S. Bull. 606; pp 283*.

Stephenson, E. A.—*Studies in Hydrothermal Alteration.* [Deals with the action of alkalies in the alteration of silicate minerals as hornblende and feldspars. The work is experimental].—Jnl. of Geol. Mar. 1916; p 180; pp 20*; 75c.

Sosman, R. B.—*Types of Prismatic Structure in Igneous Rocks.* [Many theories on the genesis of such structure in large rock bodies are given].—Jnl. of Geol. May 1916; p 215; pp 20*; 75c.

Tolman C. F., Jr.—*Observations on Certain Types of Chalcocite and Their Characteristic Etch Patterns.* [Besides describing the mineral and its peculiar occurrence many illustrations with explanations are given of the mineral and associated minerals as viewed under the microscope].—A. I. M. E. Bull. Feb. 1916; p 401; pp 33*; 35c.

——— *Summary Report of the Geological Survey, Department of Mines, Canada,* 1915. [In one volume separate reports made during the year on different districts and topics are given].—Canadian Geol. Surv. Sessional Paper 26; pp 307*.

———.—*Tungsten-Molybdenum.* [Reprint from the Colorado School of Mines Mag. Chemical methods of analysis and mineralogy of the minerals of the metals are given].—Mex. Mg. Jnl. May 1916; p 168; pp 3½; 35c.

PART II.

ORES AND MINERAL PRODUCTS.

METALS AND METAL ORES.

CHAPTER II.

GOLD, SILVER AND PLATINUM.

GOLD

Gold Fields and Mining

Alderson, M. W.—*Mining Possibilities in Colombia, South America.* [Considerable of the article is on gold dredging operations and the general conditions surrounding the same in that country].—Mg. World May 20 1916; p 947; pp 3½*; 10c.

Alderson, M. W.—*Mining Possibilities in Colombia, South America.* [A general talk on mining in this well-known and old country. Placers are the principal deposits considered].—Mg. World June 10; p 1075; pp 2¾*; 10c.

Alderson, M. W.—*Mining Possibilities in Colombia, S. A.* [A description of the alluvial deposits is given, with details of operation at several properties. In discussing the good points and faults items of financial interest, production figures and costs are brought out].—Mg. World June 24 1916; p 1169; pp 3*; 10c.

Andrews, E. C.—*Canbelego, Budgery and Budgerygar Mines, New South Wales.* [Part II on the gold and copper fields, Cobar, New South Wales].—N. S. W. Geol. Surv. Sydney, Aust.

Ball, L. C.—*Notes on a Short Tour in the Gladstone District, Queensland.* [Gold, copper, coal and molybdenum properties were visited and are briefly described].—Queen Govt. Mg. Jnl. May 15 1916; p 213; pp 1½*; 35c.

Bell, Robert N.—*Seventeenth Annual Report of the Mining Industry in Idaho for the Year* 1915. [Is a review of the usual kind made annually by the state mine inspector].—Boise, Idaho, Bur. of Mines; pp 134*.

Blackstone, R.—*The Homestake Mine, South Dakota.* [Notes on the history of its development, discovery and operation, including many of the prices paid for options and sales of claims which now make up the entire property].—Pahasapa June 1916; p 16; pp 15*; 30c.

Bradley, W. W.; Brown, G. C.; Lowell, F. L.; McLaughlin, R. P.—*Mines and Mineral Resources of Fresno, Kern, Kings, Madera, Mariposa, Merced, San Joaquin and Stanislaus Counties, California.* [Is divided into counties under which the various properties and prospects therein are separately described].—State Geol. Surv. Report 14456—EE; pp 220*.

Brayton, C. C.—*Prospecting Before Dredging on Seward Peninsula, Alaska.* [Takes up the prospect drilling of placer ground in detail].—M. & S. P. April 29 1916; p 627; pp 5¾*; 20c.

Brinegar T. P.—*Mining in Southwestern Arizona.* [A general review of current doings in the field with special reference to transportation facilities].—Mex. Mg. Jnl. Feb. 1916; p 43; pp 1¼; 35c.

Brinsmade, R. B.—*The Contact Mines of Vera Cruz.* [The geology of the formation is taken up with a general description of the country. Descriptions of different types of ore-bodies are then given and some information on historic operation of the mines].—Mex. Mg. Jnl. April 1916; p 119; pp 3*; 35c.

Brooks, A. H.—*Mining in Alaska in* 1915. [Reprint of an advance report of the U. S. G. S. on the production and operations of the district in which the principal minerals are copper, gold, silver, antimony, tin and other unimportant ores].—M. & S. P. Jan. 8 1916; p 51; pp 6*; 20c. S. L. Mg. Rev. Feb. 15 1916; p 13; pp 4*; 25c.

Brown, A. M.—*Core Drilling at the Hollinger, Ontario.* [Describes their operations underground and the equipment used].—Canadian Mg. Jnl. Feb. 1 1916; p 76; pp 1¼*; 35c.

Bulkley, J. N.—*Application of Electri-*

cal Power to Rand Mining Work. [Results with electric winding and comparison of the cost of steam and electricity are discussed].—S. Afr. Mg. Jnl. April 29 1916; p 112; pp 1; 35c.

Caldecott, W. A.—*Some Features of the Rand Gold Mining Industry.* [A paper read before the S. Afr. Assn. for the advancement of science].—S. Afr. Mg. Jnl. Jan 22 1916; p 490; pp 1; Jan. 29 1916; p 509; pp 1½; 70c.

Clarke, E. C.—*Geology and Mining at Sandstone and Hancock's, East Murchison Goldfield, Australia.*—W. Aust. Geol. Surv., Perth; Bull.; $1.

Condee, A. J.—*The Derry Ranch Gold Dredge.* [A general description of the dredge and its operations].—Mg. & Oil 1916; p 203; pp 7¼; 30c.

Cranston, R. E.—*Gold Dredging in* 1915. [A review of operations in the more important districts during the year].—E. & M. J. Jan. 8 1916; p 100; pp 2½; 25c.

Cundy, W. H.—*Bendigo Goldfield: Its Undeveloped Resources.* [Abst. from Mining & Engineering Rev.].—Monthly Report Chamber of Mines, Victoria Aust. Mar. 1916; p 63; pp 5¾; 35c.

DeWolf, W. P.—*Revival of Placer Mining Operations in Yavapai County, Arizona.* [A review of operations in the industry. Sluicing and hydraulic work are done].—Mg. World Jan. 29 1916; p 199; pp 1¼; 10c.

Doelter, C.—*Die Mineralschätze der Türkei.* [Gives separate briefs on the mineral resources of Turkey, including chromium, iron, gold, antimony, silver, lead, mercury and copper].—Montanist. Rund. April 16 1916; p 217; pp 4; 35c.

Drysdale, C. W.—*Geology and Ore Deposits of Rossland, British Columbia.* [General and economic geology are reviewed in detail. Separate descriptions of mines are given and part II is on physiography of the district].—Canadian Geol. Surv. Mem. 77; pp 317*.

Earl, T. C.—*The Gold Placers of Northwest Spain.* [Describes attempts which were made at working on the Sil river].—Technical Bookshop, London; book; pp 28*; $1.50.

Eddy, L. H.—*A California Dredge with Two Tailings Stackers.* [A new method for reclaiming dredged ground for agricultural uses].—E. & M. J. Jan. 22 1916; p 169; pp 3½* 25c.

Eddy, L. H.—*Jigs on a California Dredge.* [Hardinge mills and Neill jigs are used here with the latter placed in the sluices, and they have shown an advance in this kind of mining as well as a saving].—E. & M. J. Jan. 29 1916; p 208; pp 1¾*; 25c.

Feldtmann, W. R.—*The Mines of Ashanti Goldfields Corporation, West Africa.* [The history, methods of mining, geology and origination of the company are given. These arsenical ores must first be roasted and are then cyanided].—Mg. Mag. May 1916; p 257; pp 12*; 50c.

Fowler, Frank.—*Mining in British Guiana.* [Abst. from a report of the Commissioner of Land and Mines. Hydraulicking and dredging for gold and diamonds is reviewed and production figures given].—E. & M. J. April 22 1916; p 725; pp 1½; 25c.

Freeman, O. W.—*Gold Mining in the Judith Mountains, Montana.* [Briefs are given on some of the plants and mines. The geology and genesis of the ores and formation containing them is given with a general topographic description of the country].—M. & S. P. June 10 1916; p 863; pp 2½*; 20c.

Geary, W. P.—*Mining, Australasia in* 1915. [On the gold, silver, copper, lead and tin industries and production].—E. & M. J. Jan. 8 1916; p 126; pp 2; 25c.

Gillette, Cassius E.—*Gold Mining in Eastern Nicaragua.* [A review of the general conditions found in that country].—Mex. Mg. Jnl. April 1916; p 132; pp 1; 35c.

Harding, W. K.—*Field for the Prospector in Manitoba, Canada.* [But little prospecting has been done in this province. Some of the prospects and their results are spoken of. Mention is made of the formation found in many places which tends to indicate the presence of good ore deposits because of correlation].—Mg. World May 27 1916; p 993; pp 3½*; 10c.

Higgins, W. C.—*Mine and Mill of Bannack Gold Mining Co., Utah.* [A description of the deposit and mine workings. The mill has continuous, counter-current decantation].—S. L. Mg. Rev. May 15 1916; p 17; pp 4½*; 25c.

Higgins, W. C.—*The McAlpine Mine on the Great Mother Lode.* [History, geology and equipment of this mine which was discovered before 1855].—S. L. Mg. Rev. Mar. 15 1916; p. 15; pp 3*; 25c.

Hill, J. M.—*Working the Beach Sands of Snake River, Idaho.* [Abst. from bulletin 620-L U. S. G. S.].—Mg. World Mar. 25 1916; p 607; pp 1¾*; 10c.

Hutchins, J. P.—*Mining in the Russian Empire,* 1915. [Deals with dredging operations; the production of gold, platinum, petroleum, etc.; and labor condi-

tions].—E. & M. J. Jan. 8 1916; p 124; pp 2½; 25c.

Jacobs, E.—*Mining in British Columbia in* 1915. [Gold, silver, copper, lead, zinc and other less important minerals are reviewed].—Canadian Mg. Jnl. Feb. 1 1916; p 70; pp 2½; 35c.

Jacobs, E.—*Placer Gold Mining in British Columbia.* [A review of the production of gold from this source in general for the province and detail for the different sections].—Canadian Mg. Jnl. June 1 1916; p 274; pp 2¾; 35c.

Keiser, W. G.—*Dry Placer Mining on a Large Scale.* [A general account of placer operations in Yuma county, where dry concentration is employed. The plants used are known as Quenner-Stebbins plants].—Mg. World May 27 1916; p 999; pp 1½; 10c.

Kennedy, E. P.—*Machine-Drilling at Treadwell Mines, Alaska.* [A detailed account of various types of drills employed at different times in the Treadwell district giving the use, duties and results obtained with each].—E. & M. J. April 8 1916; p 643; pp 1¼; 25c.

Lee, C. F.—*Some Hydraulic Mining Problems.* [Abst. of a paper read before the A. I. M. E. Costs, difficulties and details of operation in the Atlin district, B. C., are given. Detailed data and information regarding sluicing are included].—Mg. World June 24 1916; p 1181; pp 1*; 10c.

Lee, C. F.; Daulton, T. M.—*The Solution of Some Hydraulic Mining Problems on Ruby Creek, British Columbia.* [A general description of the gravel beds, followed by a description of their methods of hydraulicking and costs of the same].—Bull. A. I. M. E. May 1916; p 835; pp 8*; 35c.

Livermore, Robert.—*Mining Districts of Northern Ontario.* [A review of the geology, mining and milling in northeastern Ontario, confined mostly to gold and silver].—M. & S. P. Jan. 15 1916; p 89; pp 3¾*; 20c.

Marliere, De La, E. C.—*Dredging in Mozambique, Rhodesia.* [Speaks of the industry in general and briefly describes some of the methods used].—E. & M. J. April 15 1916; p 673*; pp 2¼*; 25c.

Marriot, H. F.—*Transvaal Mining in* 1915. [Doings of the mines and mills and gem industry during the year, with production figures].—E. & M. J. Jan. 8 1916; p 122; pp 2; 25c.

Marriot, H. F.—*Transvaal Mining in* 1915. [Social and technical questions including production of the diamond and gold fields of the country are considered].—S. Afr. Mg. Jnl. Feb. 26 1916; p 596; pp 2; 35c.

McCaskey, H. D.—*Gold and Silver in* 1914. [A general report on the industry, with short miscellaneous items on the mills and production of the country].—Min. Res. of U. S. I:23; pp 37.

McDonald, P. B.—*Notes from Grass Valley, California.* [Drawings of the North Star mine's head-frame and engine house are given].—M. & S. P. Mar. 4 1916; p 343; pp 3*; 20c.

McKirahan, S.—*Mining in Surinam, Dutch Guiana.* [Placer gold is found here. The article gives a good general description of the deposits and industry in general].—Pahasapa Qt'ly April 1916; p 26; pp 3¼; 50c.

Mercer, J. W.—*Mining in Ecuador.* [A paper read before the Pan-American Scientific Soc. describing the gold mines of Zamura, the only mining province in the country. History, mineralogy and geology are taken up in fair detail].—M. & S. P. Jan. 29 1916; p 161; pp 5*; 20c. E. & M. J. Feb. 19 1916; p 343; pp 3¾; 25c.

Miller, E. L.; Singawald, J. T.—*Mining Industry in Brazil.* [Principally gold, manganese, monazite sands and gems, though deposits of iron not being worked are there. Speaks of the government railroad].—E. & M. J. April 29 1916; p 759; pp 3¾*; 25c.

Morse, E. C.—*Mining in Western Oregon.* [A historic review of the mines and mills which have been and are at present operating].—M. & S. P. Jan. 29 1916; p 169; pp 2*; 20c.

Osgood, S. W.—*Recent Developments in Gold Mining Districts of Northern Ontario.* [A current review of conditions and operations in and about the Porcupine district].—Mg. World April 8 1916; p 695; pp 1¾; 10c.

Palmer, L. A.—*The Oatman District, Arizona.* [Describes the mines, their development and present activities].—E. & M. J. May 20 1916; p 895; pp 5¼*; 25c.

Paul, H. W.—*Mining in Japan in* 1915. [Production and discussion are given on manganese, pyrite, sulphur, gold, silver, copper, coal and iron].—E. & M. J. Jan. 15 1916; p 133; pp 1½; 25c.

Probert, F. H.—*Oatman, Arizona—A Prohibition Camp.* [Gives the current situation of things in the camp].—M. & S. P. Jan. 1 1916; p 17; pp 4*; 20c.

Ritter, E. A.—*Oatman and the Tom Reed-Gold Road Mining District, Arizona.* [A description of the district and its activities with a review of the geo-

logical formation].—Mg. World April 1 1916; p 645; pp 6*; 10c.

Rogers, R. W.—*Water Powers in the Porcupine Area of Northern Ontario.* [Abst. from an Ontario Bureau of Mines' report].—Canadian Eng. Feb. 17 1916; p 251; pp 2*; 35c.

Ropes, L. S.—*Activities in the Marysville Mining District, Montana.* [Goes into the geology, mining conditions and railroad facilities].—Mg. World April 29 1916; p 819; pp 2¾*; 10c.

Rye, C. M.—*Gold Mining in the Philippines.* [Water power and combustion engines are used considerably. The descriptions are general, but separate in describing the operations of companies. Both amalgamation and cyanidation are employed].—M. & S. P. June 17 1916; p 900; pp 2½*; 20c.

Scott, W. A.—*Present Development of the Oatman District, Arizona.* [An account of the district, its operating companies and their operations, results and present stage of development].—Mg. World June 3 1916; p 1033; pp 5¼*; 10c.

Sharp, Alexander.—*Mining Conditions in British Columbia.* [Speaks of the conditions in general and includes figures on the production of coal and placer gold].—Mg. Engg. & Elect. Rec. Feb. 1916; p 1; pp 4½; 35c.

Smith, H. D.—*Natomas and Re-Soiling.* [Correspondence notes on the operation of gold dredges by the Natomas Con. Co., Cal.].—M. & S. P. Mar. 18 1916; p 397; pp 1*; 20c.

Sperr, J. D.—*The Tom Reed-Gold Road Mining District, Arizona.* [Takes up the general situation in the camp and describes the geology in a brief way].—E. & M. J. Jan. 1 1916; p 1; pp 4¾*; 25c.

Thomas, C. A.—*Lübecker Excavator in the Klondike, Alaska.* [This dredge is to be tried by the Northwest Corp. It is a chain-bucket excavator heretofore used in digging brown coal in Germany. A special design has been made to act as a gold dredge here].—E. & M. J. June 17 1916; p 1057; pp 2¾*; 25c.

Weston, E. M.—*Handling Rock Drills Underground on the Rand, South Africa.* [Abst. from Practical Mining on the Rand].—S. Afr. Mg. Jnl. Jan. 8 1916; pp 440; pp 1; 35c.

Wheler, A. S.—*Metalliferous Mines of Hunan.* [Abst. from the Far Eastern Review. A general description of the deposits and operations. They are principally antimony, some mercury and gold]. M. & S. P. Mar. 4 1916; p 337; pp 5*; 20c.

Willis, C. F.—*Mining in Arizona.* [Reviews the operation of the mines and production, principally copper and gold].—M. & S. P. Jan. 29 1916; p 171; pp 1½*; 20c.

Willis, C. F.—*Mining in Northern Arizona.* [A general review of gold, mercury and copper mining in that part of the state].—M. & S. P. April 29 1916; p 625; pp 1¾*; 20c.

Winchell, H. V.—*The Tale of the National Gold Mine, Nevada; a Latter Day Bonanza.*—Mg. World May 13 1916; p 903; pp 3¾*; 10c.

Yates, B. C.—*New Construction Work at the Homestake, South Dakota.* [A brief but detailed description of the new steam auxiliary electric station and skip hoist. The central steam plant, electric generating plant and hoist are included].—Pahasapa June 1916; p 31; pp 4; 30c.

Zalinski, E. R.—*Mining in Utah in* 1915. [Details on production and activities in gold, silver, zinc, copper and smelting industries].—E. & M. J. Jan. 15 1916; p 138; pp 2½; 25c.

——— *Alaska Juneau Gold Mining Co., Alaska.* [Details of mining and milling operations].—E. & M. J. May 20 1916; p 911; pp 1¼; 25c.

——— *Cripple Creek Increases Its Gold Output by More Than* $1,500,000. [Reviews mineral production of gold for the state, but Cripple Creek principally].—Mg. Cong. Jnl. Jan. 1916; p 15; pp 2; 25c.

——— *Dredging in Mozambique, East Africa.* [Details are given on the costs of operation and results obtained. Blasts are made in the bucket which lasted a year with 5625 blasts].—M. & S. P. Jan. 8 1916; p 43; pp 1*; 20c.

——— *Dredging Operations at the Beginning of* 1916. [An editorial review of operations during the year 1915 and a table of the dredging companies of the world, giving headquarters, location of dredge and make, with bucket capacity].—Mg. World Jan. 1 1916; p 32; pp 12½*; 10c.

——— *Gold Placers of La Paz District, Arizona.* [On the history and operation of the deposits in the district].—Mg. & Oil Bull. June 1916; p 160; pp 2*; 25c.

——— *Hollinger Costs in* 1915. [Detailed descriptive and tabulated information].—Canadian Mg. Jnl. June 1 1916; p 272; pp 2; 35c.

——— *Mineral Production of Canada in* 1915. [Abst. from a preliminary report of the Canada Department of Mines].—Mg. World Mar. 11 1916; p

523; pp 2¼; 10c. E. & M. J. Mar. 11; p 483; pp 2; 25c.

——— *Mining in Juneau, Alaska, in* 1915. [Speaks of the producing and developing mines of the district and reviews the production and conditions of the field as a whole].—E. & M. J. Jan. 15 1916; p 134; pp 2; 25c.

——— *Mining in Rhodesia.* [Mining and milling operations in the copper and gold fields, giving costs and figures on production].—E. & M. J. Jan. 15 1916; p 136; pp 1¼; 25c.

——— *Mining in the Philippine Islands.* [Gold mining and dredging are carried on. The new Benguet mill which will use the sliming cyanide process and be operated by electricity, is described].—Mex. Mg. Jnl. Jan. 1916; p 13; pp 1½; 35c.

——— *New York and Honduras Rosario Mining Co., Central America.* [Abst. from the company's report describing the mill and power plant on the property].—Mex. Mg. Jnl. Feb. 1916; p 53; pp 4½*; 35c.

——— *Nova Scotia, Annual Report of the Mines,* 1915. [Coal and gold are the principal minerals of economic importance found there].—Nova Scotia Dept. of Mines report; pp 181.

——— *Porcupine Crown Mines, Ltd., Ontario.*. [Abst. from a company report; costs, reserves, drilling operation and other information is given].—Canadian Mg. Jnl. May 1 1916; p 210; pp 1¾*; 35c.

——— *Profits and Ore Reserves of the Government Areas, South Africa.* [The distribution and general conditions of the government lands are given].—S. Afr. Mg. Jnl. Feb. 19 1916; p 575; pp 1¼*; 35c.

——— *Prosperous Year for Mines of the U. S.* [Abst. from the mid-year report of the U. S. G. S. on the production of copper, iron, zinc, silver and gold].—Mg. World Jan. 1 1916; p 51; pp 1½; 10c.

——— *Queensland Mining Industry.* [A review of 1915 made by the Under-Secretary for Mines. The condition of all things related to this department is taken up, including the production and condition of the several metal mining industries].—Queen. Govt. Mg. Jnl. Mar. 15 1916; p 101; pp 17; 35c.

——— *Rhodesia Chamber of Mines, Report of the Executive Committee.* [In tabulated form the gold production for the different companies and districts, is given].—Rhodesia Chamber of Mines; Mar. 1916; pp 5; 35c.

——— *Rhodesia Production of Gold in February,* 1916. [The production of the various mines in southern Rhodesia is tabulated].—Report of Executive Com. Feb. 1916; pp 6; 50c.

——— *The World's Gold Production in* 1915. —Mg. World Feb. 5 1916; p 231; pp 3*; 10c.

——— *Transvaal Gold Output for* 1915. [Detailed figures and description of the situation are given].—S. Afr. Mg. Jnl. Jan. 15 1916; p 460; pp 2; 35c.

Milling, Metallurgy, Assaying, Etc.

Avery, P. W.—*Galena in Gold and Silver Ores.* [Treats on the concentration of these ores found in the El Oro mines, Mexico].—E. & M. J. May 6 1916; p 819; pp 1¼; 25c.

Blackstone, R.—*The Homestake Mine, South Dakota.* [Notes on the history of its development, discovery and operation, including many of the prices paid for options and sales of claims which now make up the entire property].—Pahasapa June 1916; p 16; pp 15*; 30c.

Chauvenet, Regis. — *Blast Furnace Smelting of Cyanide Precipitation.* [Gives details for charges and methods of computing quantities of the same for the best results].—Met. & Chem. Engg. Jan. 15 1916; p 96; pp 3½; 30c.

Clevenger, G. H.—*The Hydrometallurgical Treatment of Complex Gold and Silver Ores.* [A paper read before the Pan-American Scientific Eng. Cong. relative to the history and present practices in the amalgamation and cyanide processes].—Met. & Chem. Engg. Feb. 15 Bull. Feb. 1916; p 53; pp 1*; 25c.

Durham, E. B.—*Gold-Milling in Amador, California.* [A number of mills in the district have their crushing and concentrating operations briefly described].—M. & S. P. Feb. 26 1916; p 301; pp 3*; 20c.

Feldtmann, W. R.—*The Mines of Ashanti Goldfields Corporation, West Africa.* [The history, methods of mining, geology and origination of the company are given. These arsenical ores must first be roasted and are then cyanided].—Mg. Mag. May 1916; p 257; pp 12*; 50c.

Fischer, H.—*Effect of Black Slate on Cyanidation.* [The results of a number of tests in tabulated form are given and accompanied with description of the tests].—M. & S. P. May 20 1916; p 743; pp 2¾; 20c.

Gudgeon. C. W.—*The Scheelite-Gold Mines of Otago, New Zealand.* [The geology is taken up and several proper-

ties described. Mill flow-sheets and milling and mining costs are given, besides a brief on a wet method for assaying pyritic scheelite for tungsten].—Proc. Aus. Inst. M. W.; N. S. No. 21 1916; p 37; pp 14*; 65c.

Higgins, W. C.—*Mine and Mill of Bannack Gold Mining Co., Utah.* [A description of the deposit and mine workings. The mill has continuous, counter-current decantation].—S. L. Mg. Rev. May 15 1916; p 17; pp 4⅛*; 25c.

Jane, W. H.; Davey, F.—*Clean-Up Room Practice at the Simmer Deep, South Africa.* [Treats on the method employed in cleaning the black-sand and amalgam from the plates].—Jnl. Chem. Met. & Mg. Soc. of S. Afr. Oct. 1915 p 67; pp 3½; 5c. Mex. Mg. Jnl. April 1916; p 124; pp 2; 35c.

Keiser, W. G.—*Dry Placer Mining on a Large Scale.* [A general account of placer operations in Yuma county, where dry concentration is employed. The plants used are known as Quenner-Stebbins plants].—Mg. World May 27 1916; p 999; pp 1½; 10c.

Levy, D. M.; Jones, H.—*The Morro Velho Method of Assay of Gold-Bearing Cyanide Solutions.* [Abst. from the Trans. of the Inst. of Mg. & Met.].—Mex. Mg. Jnl. Mar. 1916; p 83; pp ¾; 35c.

Magnus, B.—*The Sintering of Flotation Concentrates.* [Deals with the operation at Mount Morgan, Queensland, Australia. The ores contained about 2% copper and 7 dwt. gold. Dwight-Lloyd sintering machines were used].—E. & M. J. June 10 1916; p 1032; pp ¾*; 25c.

Marriot, H. F.—*Transvaal Mining in* 1915. [Social and technical questions including production of the diamond and gold fields of the country are considered].—S. Afr. Mg. Jnl. Feb. 26 1916; p 596; pp 2; 35c.

Martin, A. H.—*The Flotation Process at Goldfield, Nevada.* [A concise detailed description of the plant equipment, operation and results obtained. Callow pneumatic flotation cells are used].—Mg. World June 3 1916; p 1041; pp 1¼; 10c.

McCaskey, H. D.—*Gold and Silver in* 1914. [A general report on the industry, with short miscellaneous items on the mills and production of the country].—Min. Res. of U. S. I:23; pp 37.

Megraw, H. A.—*Metallurgy of Gold and Silver.* [Treats on the progress in Mexico; the Rand, South Africa; Arizona and Colorado, besides a note on the Tough-Oakes mill, Ontario].—E. & M. J. Jan. 8 1916; p 94; pp 2½; 25c.

Morse, E. C.—*Mining in Western Oregon.* [A historic review of the mines and mills which have been and are at present operating].—M. & S. P. Jan. 29 1916; p 169; pp 2*; 20c.

Mostowitsch, W.—*Extraction of Gold and Silver from Matte by Lead.* [Abst. translation from the Jnl. of the Russian Metallurgical Soc. For the greater part the text is on the results of experimental work].—Met. & Chem. Engg. June 15 1916; p 705; pp 2¾*; 30c.

Palmer, L. A.—*The Central Mill of the North Star Mines Co., California.* [Gives considerable detail on the crushing, concentration, amalgamation, slime treatment and milling costs].—Met. & Chem. Engg. Jan. 1 1916; p 35; pp 3¾*; 30c.

Palmer, L. A.—*The Oatman District, Arizona.* [Describes the mines, their development and present activities].—E. & M. J. May 20 1916; p 895; pp 5¼*; 25c.

Pearce, J. A.—*Refining Cupriferous Precipitate.* [Copper is taken into solution by the cyanide. Hydrometallurgical methods of getting and separating it from this solution are dealt with].—M. & S. P. Feb. 19 1916; p 270; pp 2½; 20c.

Peckham, A. B.—*Cyanidation at the Comacaran Mine, Salvador.* [Gives detailed information on the crushing, cyanidation, slime treatment, precipitation, clarification and sand treatment of the gold ores].—M. & S. P. April 29 1916; p 639; pp 2¾*; 20c.

Randall, C. A.—*Metallurgy at Tough-Oakes Gold Mines, Ltd., Ontario.* [The description is very complete and gives a large amount of specific data, assays, results of tests, etc.].—Canadian Mg. Jnl. May 1 1916; p 225; pp 5*; 35c.

Ritter, E. A.—*Recent Milling Practice in San Juan County, Colorado.* [Gold and silver ores with base metals are found. Brief descriptions of most of the important milling plants are given and one flotation plant is described].—Mg. World Jan. 15 1916; p 111; pp 6½*; 10c.

Rye, C. M.—*Gold Mining in the Philippines.* [Water power and combustion engines are used considerably. The descriptions are general, but separate in describing the operations of companies. Both amalgamation and cyanidation are employed].—M. & S. P. June 17 1916; p 900; pp 2½*; 20c.

Smith, A. M.—*Alkalinity of Cyanide Solutions.* [In a brief way gives details regarding experience in this line and particularly at a plant treating a tough amorphous quartz with finely divided free gold].—M. & S. P. June 3 1916; p 828; pp 1; 20c.

Smith, R. W.—*Flotation Replaces Cyanide.* [Describes a practical system for gold-silver ores in copper sulphide. Milling costs and many details of operation are given].—E. & M. J. Jan. 15 1916; p 142; pp 2½*; 25c.

Sill and Sill. — *An Electro-Cyanide Process.* [A method of electrical precipitation of gold and silver from cyanide solutions].—Mg. & Oil Bull. Mar. 1916; p 89; pp 2½*; 25c.

Weinig, A. J.—*The Liberty Bell Methods of Precipitate Refining, Colorado.* [Both acid and thermic methods are used].—Bull. A. I. M. E. Mar. 1916; p 651; pp 12; 35c.

Willard, C. G.—*The Golden Reward Roaster, South Dakota.* [A brief description with details on the crushing and roasting of the ores preliminary to cyanidation. Sulphur is reduced from an average 6% to less than 1%].—Pahasapa June 1916; p 40; 6*; 30c.

Wraight, E. A.—*Influence of Heat in Cyaniding.* [Experimental work on the effects heat has in the dissolution of gold in cyanide solutions].—Bull. of Inst. Mg. & Met. London; Dec. 9 1915; p 1; pp 18*; 50c.

——— *Alaska Juneau Gold Mining Co., Alaska.* [Details of mining and milling operations].—E. & M. J. May 20 1916; p 911; pp 1¼; 25c.

——— *Cyanide Consumption on the Rand, South Africa.* [Figures for 1914].—M. & S. P. Jan. 8 1916; p 57; pp 21; 20c.

——— *Hollinger Costs in* 1915. [Detailed descriptive and tabulated information].—Canadian Mg. Jnl. June 1 1916; p 272; pp 2; 35c.

——— *Mill and Smelter Construction in* 1915. [Editorial review on the progress in lead, zinc, copper, silver and gold smelters, mills and hydrometallurgical plants].—Mg. World Jan. 1 1916; p 17; pp 15*; 10c.

——— *Mining in Rhodesia.* [Mining and milling operations in the copper and gold fields, giving costs and figures on production].—E. & M. J. Jan. 15 1916; p 136; pp 1¼; 25c.

——— *New York and Honduras Rosario Mining Co., Central America.* [Abst. from the company's report describing the mill and power plant on the property].—Mex. Mg. Jnl. Feb. 1916; p 53; pp 4½*; 35c.

——— *Porcupine Gold Ores Treatment.* [A general review of practice followed in the district].—Canadian Mg. Jnl. May 1 1916; p 223; pp 2*; 35c.

Geology

Bastin, E. S.; Hill, J. M.—*Preliminary Report on the Economic Geology of Gilpin County, Colorado.* [On the geology of the formation and genesis of ores of gold, copper, uranium, tungsten and titanium].—U. S. G. S. Bull. 620—M pp 28*.

Brinsmade, R. B.—*The Contact Mine of Vera Cruz.* [The geology of the formation is taken up with a general description of the country. Descriptions of different types of ore-bodies are then given and some information on historical operation of the mines].—Mex. Mg. Jnl April 1916; p 119; pp 3*; 35c.

Burrows, A. G.—*The Porcupine Gold Area.* [From a report by the Ontario Bureau of Mines. Early prospecting, together with history and geology are brought out].—Canadian Mg. Jnl. Feb 15 1916; p 93; pp 3¼; May 1 1916; p 218; pp 4½*; 70c.

Cairnes, D. D.—*Upper White River District, Yukon.* [Speaks of the geography of the country, its routes of travel and a complete review of the geology and ore deposits. Gold, coal and copper make up the economic deposits of the country].—Canada Geol. Surv. Memoir 50; pp 191*.

Clarke, E. C.—*Geology and Mining at Sandstone and Hancock's, East Murchison Goldfield, Australia.*—W. Aust. Geol. Surv., Perth; Bull.; $1.

Dudley, Boyd, Jr.—*The Distribution of Silver Between Metallic Lead and Litharge Containing Slags.* [Treats on the subject with respect to the crucible fire assay of gold-silver ores].—Met. & Chem. Engg. June 1 1916; p 636; pp 6*; 30c.

Dudley, Boyd, Jr.—*The Distribution of Silver Between Metallic Lead and Litharge Containing Slag.* [Formulæ which may be used for correction of this loss are given and a complete review of investigations made to determine what amount of silver is in the lead and what part in the litharge slag, is given].—Met. & Chem. Engg. June 15 1916; p 695; pp 6*; 30c.

Drysdale, C. W.—*Geology and Ore Deposits of Rossland, British Columbia.* [General and economic geology are reviewed in detail. Separate descriptions of mines are given and part II is on physiography of the district].—Canadian Geol. Surv. Mem. 77; pp 317*.

Feldtmann, W. R.—*The Mines of Ashanti Goldfields Corporation, West Africa.* [The history, methods of mining, geology and origination of the company are given. These arsenical ores must first be

ties described. Mill flow-sheets and milling and mining costs are given, besides a brief on a wet method for assaying pyritic scheelite for tungsten].—Proc. Aus. Inst. M. W.; N. S. No. 21 1916; p 37; pp 14*; 65c.

Higgins, W. C.—*Mine and Mill of Bannack Gold Mining Co., Utah.* [A description of the deposit and mine workings. The mill has continuous, counter-current decantation].—S. L. Mg. Rev. May 15 1916; p 17; pp 4½*; 25c.

Jane, W. H.; Davey, F.—*Clean-Up Room Practice at the Simmer Deep, South Africa.* [Treats on the method employed in cleaning the black-sand and amalgam from the plates].—Jnl. Chem. Met. & Mg. Soc. of S. Afr. Oct. 1915 · p 67; pp 3½; 85c. Mex. Mg. Jnl. April 1916; p 124; pp 2; 35c.

Keiser, W. G.—*Dry Placer Mining on a Large Scale.* [A general account of placer operations in Yuma county, where dry concentration is employed. The plants used are known as Quenner-Stebbins plants].—Mg. World May 27 1916; p 999; pp 1½; 10c.

Levy, D. M.; Jones, H.—*The Morro Velho Method of Assay of Gold-Bearing Cyanide Solutions.* [Abst. from the Trans. of the Inst. of Mg. & Met.].—Mex. Mg. Jnl. Mar. 1916; p 83; pp ¾; 35c.

Magnus, B.—*The Sintering of Flotation Concentrates.* [Deals with the operation at Mount Morgan, Queensland, Australia. The ores contained about 2% copper and 7 dwt. gold. Dwight-Lloyd sintering machines were used].—E. & M. J. June 10 1916; p 1032; pp ¾*; 25c.

Marriot, H. F.—*Transvaal Mining in* 1915. [Social and technical questions including production of the diamond and gold fields of the country are considered].—S. Afr. Mg. Jnl. Feb. 26 1916; p 596; pp 2; 35c.

Martin, A. H.—*The Flotation Process at Goldfield, Nevada.* [A concise detailed description of the plant equipment, operation and results obtained. Callow pneumatic flotation cells are used].—Mg. World June 3 1916; p 1041; pp 1¼; 10c.

McCaskey, H. D.—*Gold and Silver in* 1914. [A general report on the industry, with short miscellaneous items on the mills and production of the country].—Min. Res. of U. S. I:23; pp 37.

Megraw, H. A.—*Metallurgy of Gold and Silver.* [Treats on the progress in Mexico; the Rand, South Africa; Arizona and Colorado, besides a note on the Tough-Oakes mill, Ontario].—E. & M. J. Jan. 8 1916; p 94; pp 2½; 25c.

Morse, E. C.—*Mining in Western Oregon.* [A historic review of the mines and mills which have been and are at present operating].—M. & S. P. Jan. 29 1916; p 169; pp 2*; 20c.

Mostowitsch, W.—*Extraction of Gold and Silver from Matte by Lead.* [Abst. translation from the Jnl. of the Russian Metallurgical Soc. For the greater part the text is on the results of experimental work].—Met. & Chem. Engg. June 15 1916; p 705; pp 2¾*; 30c.

Palmer, L. A.—*The Central Mill of the North Star Mines Co., California.* [Gives considerable detail on the crushing, concentration, amalgamation, slime treatment and milling costs].—Met. & Chem. Engg. Jan. 1 1916; p 35; pp 3¾*; 30c.

Palmer, L. A.—*The Oatman District, Arizona.* [Describes the mines, their development and present activities].—E. & M. J. May 20 1916; p 895; pp 5¼*; 25c.

Pearce, J. A.—*Refining Cupriferous Precipitate.* [Copper is taken into solution by the cyanide. Hydrometallurgical methods of getting and separating it from this solution are dealt with].—M. & S. P. Feb. 19 1916; p 270; pp 2½; 20c.

Peckham, A. B.—*Cyanidation at the Comacaran Mine, Salvador.* [Gives detailed information on the crushing, cyanidation, slime treatment, precipitation, clarification and sand treatment of the gold ores].—M. & S. P. April 29 1916; p 639; pp 2¾*; 20c.

Randall, C. A.—*Metallurgy at Tough-Oakes Gold Mines, Ltd., Ontario.* [The description is very complete and gives a large amount of specific data, assays, results of tests, etc.].—Canadian Mg. Jnl. May 1 1916; p 225; pp 5*; 35c.

Ritter, E. A.—*Recent Milling Practice in San Juan County, Colorado.* [Gold and silver ores with base metals are found. Brief descriptions of most of the important milling plants are given and one flotation plant is described].—Mg. World Jan. 15 1916; p 111; pp 6½*; 10c.

Rye, C. M.—*Gold Mining in the Philippines.* [Water power and combustion engines are used considerably. The descriptions are general, but separate in describing the operations of companies. Both amalgamation and cyanidation are employed].—M. & S. P. June 17 1916; p 900; pp 2½*; 20c.

Smith, A. M.—*Alkalinity of Cyanide Solutions.* [In a brief way gives details regarding experience in this line and particularly at a plant treating a tough amorphous quartz with finely divided free gold].—M. & S. P. June 3 1916; p 828; pp 1; 20c.

Soc. of S. Afr. Feb. 1916; p 144; pp 37*; 85c.

Mellor, E. T.—*The East Rand, South Africa.* [A description of the various geological formation tending to correlate the several reefs in the vicinity].—S. Afr. Mg. Jnl. Jan. 8 1916; p 435; pp 1½; 35c.

Mellor, E. T.—*The Far East Rand.* [A paper to be read to the Geol. Soc. of South Africa. It brings out a correlation of the separate reefs now known].—Mg. Mag. Dec. 1915; p 313; pp 7*; 50c.

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Mercer, J. W.—*Mining in Ecuador.* [A paper read before the Pan-American Scientific Soc. describing the gold mines of Zamura, the only mining province in the country. History, mineralogy and geology are taken up in fair detail].—M. & S. P. Jan. 29 1916; p 161; pp 5*; 20c. E. & M. J. Feb. 19 1916; p 343; pp 3¾; 25c.

O'Harra, B. M.—*Black Hills Gold-Bearing Iron-Quartz-Tremolite Belt, South Dakota.* [Abst. from a thesis at the South Dakota School of Mines].—E. & M. J. April 29 1916; p 770; pp 3¼*; 25c.

Packard, G. A.—*The Gold Lake District, Manitoba, Canada.* [A geological description of the district where recent finds have been made and are being developed, but not as yet proven].—E. & M. J. Feb. 19 1916; p 339; pp 1¾*; 25c.

Peterson, F. P.; Flynn, F. H.—*The Walhalla District, South Carolina.* [Gold occurs as leached surface ore and with sulphides. The latter are not of economic value. Geology and mineralogy of the formation and ores are described].—E. & M. J. Feb. 26 1916; p 379; pp 3¼*; 25c.

Rau, A. E.—*Goldstone District, San Bernardino County, California.* [The geology, topography and nature of the ore deposits and formation is described].—Mg. & Oil Bull. June 1916; p 149; pp 7*; 25c.

Reinecke, Leopold.—*Ore Deposits of the Beaverdell Map-Area, British Columbia.* [This area has been prospected but little. The ores are gold-bearing chalcopyrite and galena-sphalerite-pyrite silver bearing ores].—Canadian Geol. Surv. Memoir 79; pp 178*.

Ritter, E. A.—*Oatman and the Tom Reed-Gold Road Mining District, Arizona.* [A description of the district and its activities with a review of the geological formation].—Mg. World April 1916; p 645; pp 6*; 10c.

Ropes, L. S.—*Observations on Marysville District, Montana.* [Brings out the mineralogical peculiarities and geological peculiarities of the formation in the district].—Mg. World Feb. 19 1916; p 395 pp 1¾; 10c.

Ropes, L. S.—*Activities in the Marysville Mining District, Montana.* [Goes into the geology, mining conditions and railroad facilities].—Mg. World April 29 1916; p 819; pp 2¾*; 10c.

Schofield, S. J.—*Geology of the Cranbrook Map-Area, British Columbia.* [Copper and silver-lead deposits are most important, though placer and vein gold, and clay are found].—Canada Dept. of Mines; Memoir 76; pp 245*.

Sperr, J. D.—*The Tom Reed-Gold Road Mining District, Arizona.* [Takes up the general situation in the camp and describes the geology in a brief way].—E. & M. J. Jan. 1 1916; p 1; pp 4¾*; 25c.

Stewart, A. K.—*The Geology and Mining Activities of Northern Ontario Mining Fields.* [A general review of the numerous camps in which the geology, financial and production figures are brought out].—Mg. World April 15 1916; p 733; pp 3*; 10c.

Wheler, A. S.—*Metalliferous Mines of Hunan.* [Abst. from the Far Eastern Review. A general description of the deposits and operations. They are principally antimony, some mercury and gold].—M. & S. P. Mar. 4 1916; p 337; pp 5*; 20c.

Winchell, H. V.—*The Tale of the National Gold Mine, Nevada; a Latter Day Bonanza.*—Mg. World May 13 1916; p 903; pp 3¾*; 10c.

——— *Dutch Guiana.* [Describes the country, genesis of its large gold deposits, etc.].—Mex. Mg. Jnl. Feb. 1916; p 52; pp 1½; 35c.

——— *Rand's Ore Reserves, South Africa.* [A compilation of official figures from annual company reports showing 90,000,000 tons in sight].—S. Afr. Mg. Jnl. April 29 1916; pp 1; 35c.

——— *The Broad Pass Region, Alaska.* [Conditions in this district which has the possibilities of furnishing much mineral wealth].—Mg. World Jan. 22 1916; p 166; pp 1*; 10c.

——— *The Cottonwood-American Fork Mining Region, Utah.* [A brief description with a geological map of the district from the U. S. G. S.].—Mg. World Mar. 11 1916; p 521; pp 1¾*; 10c.

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Bochert, W. C.—*Review of Mining Operations in the Northern Hills, South Dakota.* [The history and production of the gold, silver and tungsten properties of the state are reviewed in detail, though briefly].—Pahasapa June 1916; p 49; pp 5*; 30c.

Brooks, A. H.—*Mining in Alaska in* 1915. [Reprint of an advance report of the U. S. G. S. on the production and operations of the district in which the principal minerals are copper, gold, silver, antimony, tin and other unimportant ores].—M. & S. P. Jan. 8 1916; p 51; pp 6*; 20c. S. L. Mg. Rev. Feb. 15 1916; p 13; pp 4*; 25c.

Haggen, E. A.—*Surf Inlet Mine, British Columbia.* [Describes the formation, ore bodies and items of financial interest].—Mg. Engg. & Elect. Rec. Dec. 1915; p 197; pp 4¾*; 35c.

Hance, J. H.—*Segregation in Gold Bullion.* [Gold tends to segregate to different parts of the bullion bar and unless care is taken will make erroneous samples. Methods of sampling and assaying are here described].—A. I. M. E. Bull. Feb. 1916; p 299; pp 28*; 35c. Mg. World Mar. 25 1916; p 601; pp ¾; 10c.

Hobart, Frederick.—*Gold and Silver,* 1915. [Reviews the production and condition of the market, for the world by countries and by states for the U. S.].—E. & M. J. Jan. 8 1916; p 43; pp 1½*; 25c.

Key, A. C.—*Rand Mining in* 1915. [On the production of the gold industry and financial figures which show that the profits are about stationary but dividends lessened].—E. & M. J. May 6 1916; p 809; pp 1¾*; 25c.

McDonald, J. A.—*Bench Claims in the Yukon, Alaska.* [Describes the law regarding the location, size, etc., of this kind of claim].—E. & M. J. April 22 1916; p 722; pp 1*; 25c.

McDonald, J. A.—*Remedies for Incongruities of Yukon Placer Regulations.* [Takes up the law regarding the placer claim, size, location, etc.].—E. & M. J. May 6 1916; p 806; pp 1; 25c.

Rickard, T. A.—*Philip Argall and Metallurgical Progress.* [A review of Mr. Argall's life in the mining field, including experience with gold, tin, copper, etc.].—M. & S. P. Jan. 22 1916; p 119; pp 12*; 20c.

Rickard, T. A.—*The Re-Opening of Old Mines Along Mother Lode, California.* [Gives details on the history of present and historical companies. Figures on their production and methods of operation are given].—M. & S. P. June 24 1916; p 935; pp 5*; 20c.

Seaman, W. Y.—*The Lure of Cripple Creek Gold.* [A historic and current account of the gold deposits in this district. Production figures and descriptions of how many of the larger mines were discovered are given].—W. Y. Seaman, Denver; pp 48; 25c.

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Smith, H. D.—*Natomas and Re-Soiling.* [Correspondence notes on the operation of gold dredges by the Natomas Con. Co., Cal.].—M. & S. P. Mar. 18 1916; p 397; pp 1*; 20c.

——— *Profits and Ore Reserves of the Government Areas, South Africa.* [The distribution and general conditions of the government lands are given].—S. Afr. Mg. Jnl. Feb. 19 1916; p 575; pp 1¼*; 35c.

——— *Slide Rule's Use in Calculating Base-Bullion Assays.*—Met. & Chem. Engg. May 15 1916; p 561; pp 1*; 30c.

——— *Summary Report of the Geological Survey, Department of Mines, Canada,* 1915. [In one volume separate reports made during the year on different districts and topics are given].—Canadian Geol. Surv. Sessional Paper 26; pp 307*.

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Fowler, Frank.—*Mining in British Guiana.* [Abst. from a report of the Commissioner of Land and Mines. Hydraulicking and dredging for gold and diamonds is reviewed and production figures given].—E. & M. J. April 22 1916; p 725; pp 1½; 25c.

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Hill, J. M.—*Notes on the Fine Gold of Snake River, Idaho.* [Abst. from a U. S. G. S. Bull. Platinum is found. Production figures are given and a general geological description follows].—Mg. World Mar. 18 1916; p 563; pp 2½*; 10c.

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Hutchins, J. P.—*Mining in the Russian Empire,* 1915. [Deals with dredging operations; the production of gold, platinum, petroleum, etc.; and labor conditions].—E. & M. J. Jan. 8 1916; p 124; pp 2½; 25c.

Jacobs, E.—*Mining in British Columbia in* 1915. [Gold, silver, copper, lead, zinc and other less important minerals are reviewed].—Canadian Mg. Jnl. Feb. 1 1916; p 70; pp 2½; 35c.

Jacobs, E.—*Placer Gold Mining in British Columbia.* [A review of the production of gold from this source in general for the province and detail for the different sections].—Canadian Mg. Jnl. June 1 1916; p 274; pp 2¾; 35c.

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Lee, W. T.—*The Aztec Gold Mine, Baldy, New Mexico.* [The property produced in 1870 and recently it has been reopened by the discovery of more rich ore in it. A general geological description of the property is given].—U. S. G. S. Bull. 620-N; pp 6*.

Lindgren, Waldemar.—*Gold and Silver Deposits in North and South America.* [A paper read before the Pan-American Scientific Soc. Localities are taken separately. Their gold and silver production discussed as regards their production and distribution of ores].—Bull. A. I. M. E. April 1916; p 721; pp 26; 35c.

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Miller, E. L.; Singawald, J. T.—*Mi ing Industry in Brazil.* [Principally gol manganese, monazite sands and gem though deposits of iron not being worke are there. Speaks of the government rail road].—E. & M. J. April 29 1916; p 759 pp 3¾*; 25c.

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Sharp, Alexander.—*Mining Conditions in British Columbia.* [Speaks of the conditions in general and includes figures on the production of coal and placer gold].—Mg. Engg. & Elect. Rec. Feb. 1916; p 1; pp 4½; 35c.

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Willis, C. F.—*Mining in Arizona.* [Reviews the operation of the mines and production, principally copper and gold].—M. & S. P. Jan. 29 1916; p 171; pp 1½*; 20c.

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——— *Cripple Creek Increases Its Gold Output by More Than* $1,500,000. [Reviews mineral production of gold for the state, but Cripple Creek principally].—Mg. Cong. Jnl. Jan. 1916; p 15; pp 2; 25c.

——— *Dredging Operations at the Beginning of* 1916. [An editorial review of operations during the year 1915 and a table of the dredging companies of the world, giving headquarters, location of dredge and make, with bucket capacity].—Mg. World Jan. 1 1916; p 32; pp 12½*; 10c.

——— *Mineral Production of Canada in* 1915. [Abst. from a preliminary report of the Canada Department of Mines].—Mg. World Mar. 11 1916; p 523; pp 2¼; 10c. E. & M. J. Mar. 11; p 483; pp 2; 25c.

——— *Mining in Juneau, Alaska, in* 1915. [Speaks of the producing and developing mines of the district and reviews the production and conditions of the field as a whole].—E. & M. J. Jan. 15 1916; p 134; pp 2; 25c.

——— *Mining in Rhodesia.* [Mining and milling operations in the copper and gold fields, giving costs and figures on production].—E. & M. J. Jan. 15 1916; p 136; pp 1¼; 25c.

——— *Nova Scotia, Annual Report of the Mines,* 1915. [Coal and gold are the principal minerals of economic importance found there].—Nova Scotia Dept. of Mines report; pp 181.

——— *Porcupine Crown Mines, Ltd., Ontario.* [Abst. from a company report; costs, reserves, drilling operation and other information is given].—Canadian Mg. Jnl. May 1 1916; p 210; pp 1¾*; 35c.

——— *Production of Gold in the United States in 1915.*—Mg. World Feb. 5 1916; p 234; pp 5*; 10c.

——— *Prosperous Year for Mines of the U. S.* [Abst. from the mid-year report of the U. S. G. S. on the production of copper, iron, zinc, silver and gold].—Mg. World Jan. 1 1916; p 51; pp 1½; 10c.

——— *Queensland Mining Industry.* [A review of 1915 made by the Under-Secretary for Mines. The condition of all things related to this department is taken up, including the production and condition of the several metal mining industries].—Queen. Govt. Mg. Jnl. Mar. 15 1916; p 101; pp 17; 35c.

——— *Rand Mining Figures for* 1915. [A review of the production from this field].—S. Afr. Mg. Jnl. Feb. 5 1916; p 527; pp 1½; 35c.

——— *Rhodesia Chamber of Mines, Report of the Executive Committee.* [In tabulated form the gold production for the different companies and districts, is given].—Rhodesia Chamber of Mines; Mar. 1916; pp 5; 35c.

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——— *The World's Gold Production in* 1915.—Mg. World Feb. 5 1916; p 231; pp 3*; 10c.

——— *Transvaal Gold Output for* 1915. [Detailed figures and description of the situation are given].—S. Afr. Mg. Jnl. Jan. 15 1916; p 460; pp 2; 35c.

SILVER

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Bell, R. N.—*Mining in Idaho.* [Reviews operations of the principal mines and smelters in the state].—E. & M. J. Jan. 22 1916; p 177; pp 3; 25c.

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Operations in the Northern Hills, South Dakota. [The history and production of the gold, silver and tungsten properties of the state are reviewed in detail, though briefly].—Pahasapa June 1916; p 49; pp 5*; 30c.

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Guy, Albert E.—*Pumping Installations in Leadville, Colo.* [Details of tests and methods of operation for pumping in the district. Direct connected, multi-stage and other types are used].—Mg. World Jan. 22 1916; p 159; pp 3½*; 10c.

Higgins, W. C.—*Resumption of Activities at Howell Mine.* [Brings out a general review of the Cottonwood district, Utah].—S. L. Mg. Rev. April 15 1916; p 15; pp 3*; 25c.

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Hoffman, J. D.—*The Bawdwin Mines, Burma, India.* [The mines are in the northern part of the province. They produce lead, silver and zinc as a complex ore. The history, geology, development of the mines and a brief on the treatment of the ore are given].—Mg. Mag. Mar. 1916; p 139; pp 8*; 50c.

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West, H. E.—*Vistas del Peru.* eral description of the country and ularly on things related to the mi dustry. Copper and silver are th cipal metals produced].—M. & S. 13 1916; p 704; pp 3*; 20c.

Zalinski, E. R.—*Mining in Utah* [Details on production and activ gold, silver, zinc, copper and smel dustries].—E. & M. J. Jan. 15 138; pp 2½; 25c.

——— *Metal Output of the States.* [With some discussion th and quantity of lead, zinc, silver a per produced are given].—M. & June 3 1916; p 821; pp 1; 20c.

——— *Mineral Production o ada in* 1915. [Abst. from a prel report of the Canada Departm Mines].—Mg. World Mar. 11 1916 pp 2¼; 10c. E. & M. J. Mar. 11 pp 2; 25c.

——— *Production of America Reaches Highest Point in* 1915. [iron and zinc show the largest Mg. Cong. Jnl. Jan. 1916; p 9; pp

——— *Prosperous Year for M the U. S.* [Abst. from the mid- port of the U. S. G. S. on the tion of copper, iron, zinc, silv gold].—Mg. World Jan. 1 1916; pp 1½; 10c.

———. *Queensland Mining Industry.* [A review of 1915 made by the Under-Secretary for Mines. The condition of all things related to this department are taken up, including the production and condition of the several metal mining industries].—Queen Govt. Mg. Jnl. Mar. 15 1916; p 101; pp 17; 35c.

———. *Silver Production in the United States in* 1915.—Mg. World Feb. 5 1916; p 240; pp 1½*; 10c.

——— *Summary Report of the Geological Survey, Department of Mines, Canada,* 1915. [In one volume separate reports made during the year on different districts and topics are given].—Canadian Geol. Surv. Sessional Paper 26; pp 307*.

PLATINUM

Crampton, F. A.—*Platinum at the Boss Mine, Goodsprings, Nevada.* [A very complete description on the geology of the deposit at this mine and in general for the district].—M. & S. P. April 1 1916; p 479; pp 3¼*; 20c.

Fahrenwald, F. A.—*A Development of Practical Substitutes for Platinum and Its Alloys, with Special Reference to the Alloys of Molydenum and Tungsten.* [Details are given regarding the making of the alloys and their properties, including a metallographic description].—A. I. M. E. Bull. Jan. 1916; p 103; pp 47*; 35c.

Hill, J. M.—*Notes on the Fine Gold of Snake River, Idaho.* [Abst. from a U. S. G. S. Bull. Platinum is found. Production figures are given and a general geological description follows]. — Mg. World Mar. 18 1916; p 563; pp 2½*; 10c.

Hutchins, J. P.—*Mining in the Russian Empire,* 1915. [Deals with dredging operations; the production of gold, platinum, petroleum, etc.; and labor conditions].—E. & M. J. Jan. 8 1916; p 124; pp 2½; 25c.

Preston, T. H.—*The Urals and Their Mineral Wealth.* [Steel, copper, platinum, osmiridium and miscellaneous other minerals are reviewed as regards their industry and production].—Mg. Mag. April 1916; p 197; pp 5; 50c.

Burgess, G. K.; Waltenberg, R. G.—*Further Experiments on the Volatilization of Platinum.* [Tests were made at 700, 1,000 and 1,200. Also with hydrochloric and hydrofluoric acids].—U. S. Bur. of Stand. Sci. Paper 280; pp 9; 15c.

CHAPTER III.

COPPER.

Mines and Mining

Andrews, E. C.—*Canbelego, Budgery and Budgerygar Mines, New South Wales.* [Part II on the gold and copper fields Cobar, New South Wales].—N. S. W. Geol. Surv. Sydney, Aust.

Ball, L. C.—*Notes on a Short Tour in the Gladstone District, Queensland.* [Gold, copper, coal and molybdenum properties were visited and are briefly described].—Queen Govt. Mg. Jnl. May 15 1916; p 213; pp 1½*; 35c.

Beckett, P. G.—*The Water Problem at the Old Dominion Mine, Arizona.* [Geology is described as related to water seepage. Pumping, including air-lifts, is then taken up and systems and methods of detailed operations described].—Bull. A. I. M. E. April 1916; p 679; pp 32*; 35c.

Bell, Robert N.—*Seventeenth Annual Report of the Mining Industry in Idaho for the Year* 1915. [Is a review of the usual kind made annually by the state mine inspector].—Boise, Idaho, Bur. of Mines; pp 134*.

Bliek, P. F.; Söhnlein, M. G. F.—*Bolivion Tin Mining in* 1915. [Brings out figures and information on the production and conditions in the field during the year. Particularly tin and copper].—E. & M. J. Jan. 22 1916; p 173; pp 2½*; 25c.

Bradley, W. W.; Brown, G. C.; Lowell, F. L.; McLaughlin, R. P.—*Mines and Mineral Resources of Fresno, Kern, Kings, Madera, Mariposa, Merced, San Joaquin and Stanislaus Counties, California.* [Is divided into counties under which the various properties and prospects therein are separately described].—State Geol. Surv. Report 14456—EE; pp 220*.

Brinsmade, R. B.—*The Contact Mines of Vera Cruz.* [The geology of the formation is taken up with a general description of the country. Descriptions of different types of ore-bodies are then given and some information on historic operation of the mines].—Mex. Mg. Jnl. April 1916; p 119; pp 3*; 35c.

Burch, H. K.; Whiting, M. A.—*Automatic Operation of Mine Hoists as Exemplified by the New Electric Hoists for the Inspiration Consolidated Copper Co., Arizona.* [A complete description of the plant and peculiarities noted].—Bull. A. I. M. E. Mar. 1916; p 583; pp 14*; 35c.

Carnahan, T. S.—*Underground Mining Methods of Utah Copper Co., Utah.* [Describes the geology of the body, methods of stoping, construction of chutes, haulage, costs, supports, etc.].—A. I. M. E. Bull. Jan. 1916; p 51; pp 14*; 35c. E. & M. J. Jan. 29 1916; p 216; pp 4½; 25c.

De Wolf, W. P.—*Jerome, Ariz., the Center of a Great Copper Mining Industry.* [A general talk on the district and its mines].—Mg. World April 22 1916; p 775; pp 2½*; 10c.

Dickson, R. H.—*Mitchell Top-Slice and Caving System.* [The system is used extensively in the Cole mine of the Calumet & Arizona Co., Bisbee, Ariz].—E. & M. J. Mar. 25 1916; p 545; pp 4½*; 25c.

Dickson, R. H.—*The Gilman Cut-and-Fill System of Mining.* [A system for the mining of 10-ft. slices which must be of sufficiently strong ground to hold while the slice is being mined and filled].—E. & M. J. April 8 1916; p 631; pp 2¾*; 25c.

Geary, W. P.—*Mining, Australasia in* 1915. [On the gold, silver, copper, lead and tin industries and production].—E. & M. J. Jan. 8 1916; p 126; pp 2; 25c.

Gibson, T. W.—*The Mining Industry of Ontario in* 1915. [Treats on the gold, silver, copper and nickel production of the province].—Canadian Mg. Inst. Bull. Jan. 1916; p 16; pp 4½; 35c. E. & M. J. Jan. 8 1916; p 121; pp 1¼; 25c.

Grunow, W. R.—*Churn-Drill Prospecting at Morenci, Arizona.* [The drilling is being done by the Detroit Copper Co. Methods of operation and sampling are given. The total cost per foot including the cost of the drill is $3.257, without $2,048. A cost sheet is given].—E. & M. J. June 3 1916; p 5¾*; 25c.

Higgins, W. C.—*Development and Equipment of the Walker Copper Mine, California.* [Mine development and milling operations are described. A table itemizing the production cost is also given].—S. L. Mg. Rev. Mar. 30 1916; p 11; pp 3*; 25c.

Hill, J. M.—*Gold, Silver, Copper, Lead and Zinc in the Eastern States in* 1915. [The industry and production is reviewed separately for the entire group of states by metals and is later reviewed by states and counties].—Min. Res. of U. S. 1:2; pp 14.

Hixon, H. W.—*Electrothermic Zinc Smelting in Puebla, Mexico.* [A description of the operation of the Teziutlan

Copper Co.'s plant is given. The ores run 4% copper and 10% zinc. The zinc is obtained as dust for cyanidation work].—E. & M. J. June 17 1916; p 1080; pp 1¼; 25c.

Hodgson, J. P.—*Operations of the Copper Queen Mines, Bisbee, Arizona.* [A general review of the company's doings during the recent past with regard to smelting, mining, etc.].—Mg. World Feb. 26 1916; p 429; pp 4¼*; 10c.

Jackling, D. C.—*A Year's Results at the Chino Copper Property, New Mexico.* [Abst. from the annual report. Milling and mining operations are given with figures on production and the itemized cost for the same].—Mg. World April 22 1916; p 787; pp 1¾; 10c.

Jacobs, E.—*Mining in British Columbia in* 1915. [Gold, silver, copper, lead, zinc and other less important minerals are reviewed].—Canadian Mg. Jnl. Feb. 1 1916; p 70; pp 2½; 35c.

Kellogg, L. O.—*Stripping the Overburden in Openpit Mining.* [A general review of the subject, taking copper and iron deposits into consideration mostly]. —Engg. Mag. Mar. 1916; p 896; pp 14*; 35c.

Marstrander, R.—*The Mineral Resources of Uruguay, South America.* [The country has been exploited but little. Iron-manganese ore is of greatest importance, though gold and copper are found and there is possibility for lead, silver, coal and petroleum].—Mg. Mag. June 1916; p 315; pp 6*; 50c.

McCaskey, H. D.—*Mineral Production of the United States in* 1914. [The subject is taken up separately by the minerals and collectively by production of the U. S].—Min. Res. of U. S. I:A; pp 69.

McDonald, P. B.—*Mining at the Nevada Consolidated, Nevada.* [Items of financial interest from many other copper companies are spoken of. The deposit is described from a mining standpoint. The methods of timbering, haulage, drilling, etc., are described].—M. & S. P. June 10 1916; p 858; pp 4*; 20c.

McDonald, P. B.—*Modern Blasting Practice.* [Details regarding the explosives used and methods of placing holes for large scale blasting at some of the copper properties in Nevada].—M. & S. P. May 27 1916; p 788; pp 2¾*; 20c.

McLeish, John.—*Annual Report on the Mineral Production of Canada,* 1914. [Each mineral is reported on separately. The imports, exports, production and condition of the trade are given].—Canada Dept. of Mines, Mines Branch No. 354; pp 362.

Notman, *Arthur.—Costs of Churn Drilling at Sacramento Hill, Arizona.* [Abst. from the A. I. M. E. Bull. Data was obtained from operations of the Copper Queen Co., near Bisbee, and are given in detail, with description].—E. & M. J. Jan. 29 1916; p 226; pp 1¼; 25c.

Paul, H. W.—*Mining in Japan in* 1915. [Production and discussion are given on manganese, pyrite, sulphur, gold, silver, copper, coal and iron].—E. & M. J. Jan. 15 1916; p 133; pp 1½; 25c.

Preston, T. H.—*The Urals and Their Mineral Wealth.* [Steel, copper, platinum, osmiridium and miscellaneous other minerals are reviewed as regards their industry and production].—Mg. Mag. April 1916; p 197; pp 5; 50c.

Ricketts, L. D.—*Improved Mining and Metallurgy an Aid to Conservation.* [A paper read before the Pan-American Scientific Cong. reviewing the progress in mining methods, metallurgy and concentration of copper ores principally].—E. & M. J. Feb. 12 1916; p 291; pp 1½; 25c.

Scott, D. B.—*Stoping Hard Ore at Miami, Arizona.* [Abst. from a paper read before the A. I. M. E.].—M. & S. P. June 24 1916; p 943; pp 4*; 20c.

Sherman, G. F. G.—*Round Rope on Grooved Drums Now Used at the Copper Queen Mine.* [Abst. from a paper read before the A. I. M. E., giving detailed information on the use of the same].—Mg. World Jan. 8 1916; p 73; pp 1¼*; 10c.

Singewald, J. T., Jr.; Miller, B. L.—*Mining in Oriente Province, Cuba.* [A general description of the country and geology is given. Copper and iron mines are operated. Open-pit methods and flotation treatment of ores are used].—E. & M. J. April 1, 1916; p 587; pp 6*; 25c.

Singewald, J. T., Jr.; Miller, B. L.—*The Cerro de Pasco District, Peru.* [On the history of the camp, which was originally a silver camp. The geology of the large copper deposits is given the greater preference].—E. & M. J. June 10 1916; p 1015; pp 4*; 25c.

West, H. E.—*Vistas del Peru.* [A general description of the country and particularly on things related to the mining industry. Copper and silver are the principal metals produced].—M. & S. P. May 13 1916; p 704; pp 3*; 20c.

Willis, C. F.—*Mining in Arizona.* [Reviews the operation of the mines and production, principally copper and gold]. —M. & S. P. Jan. 29 1916; p 171; pp 1½*; 20c.

Willis, C. F.—*Mining in Northern Arizona.* [A general review of gold, mercury and copper mining in that part

of the state].—M. & S. P. April 29 1916; p 625; pp 1¾*; 20c.

Yeatman, Pope.—*Mine of Chile Exploration Co., Chuquicamata, Chile.* [A paper read before the Pan-American Scientific Cong. History, geology, ore reserves, leaching and the electric power plant are all taken up in fair detail].—E. & M. J. Feb. 12 1916; p 307; pp 5*; 25c.

Zalinski, E. R.—*Mining in Utah in* 1915. [Details on production and activities in gold, silver, zinc, copper and smelting industries].—E. & M. J. Jan. 15 1916; p 138; pp 2½; 25c.

——— *Chino Copper Co., New Mexico.* [Abst. from annual report. A general review with figures on cost and finances].—E. & M. J. April 22 1916; p 736; pp 1; 25c.

——— *Conversaciones Sobre Contribucion Minera.* [Some contributions and talks on the mineral industry of South American countries. Copper, lead and petroleum are the principal things considered].—Inf. y Mem. Soc. Ing. Peru Dec. 1915; p. 535; pp 26; 75c.

——— *Copper,* 1915. [One page is given to a general discussion of the industry for the world and the remaining 1½ pages reviews the market by months for the U. S.].—E. & M. J. Jan. 8 1916; p 48; pp 2½; 25c.

——— *Die Unter der Preussischen Berg-, Hütten-, und Salinenverwaltung Stehenden Staatswerke im Jahre* 1914. [Treats on the salt, iron, coal, copper and smelting industries operated by the Prussian government].—Glückauf Feb. 19 1916; p 150; pp 4¼; 50c.

——— *Direct Current of* 250 *Volts Used Underground at the Copper Queen, Arizona.* [Gives details on the construction of the lines which are used for haulage and relates to five accidents which have resulted from this source].—Mg. World Jan. 15 1916; p 116; pp 1; 10c.

——— *Mining in Rhodesia.* [Mining and milling operations in the copper and gold fields, giving costs and figures on production].—E. & M. J. Jan. 15 1916; p 136; pp 1¼; 25c.

——— *Nevada Consolidated Copper Co., Nevada.* [Abst. from annual report. Information on finances, prospecting, ore reserves, milling and smelting, and mining costs and operations].—E. & M. J. April 22 1916; p 734; pp 1¼; 25c.

——— *Queensland Mining Industry.* [A review of 1915 made by the Under-Secretary for Mines. The condition of all things related to this department is taken up, including the production and condition of the several metal mining industries].—Queen Govt. Mg. Jnl. Mar. 15 1916; p 101; pp 17; 35c.

——— *Ray Consolidated Copper Co., Arizona.* [Abst. from annual report. Information on mining and milling costs, reserves and production].—E. & M. J. April 22, 1916; p 738; pp 1¼; 25c.

——— *The Braden Smelter, Chile.* [Confined to operations, with some information on construction].—Teniente Topics Nov. 1915; p 1; pp 8*; 30c.

——— *The Broad Pass Region, Alaska.* [Conditions in this district which has the possibilities of furnishing much mineral wealth].—Mg. World Jan. 22 1916; p 166; pp 1*; 10c.

——— *The Carr Bit.* [A special rock-drill bit which has increased drilling in the Calumet & Hecla properties, Michigan, 40 per cent].—Canadian Mg. Jnl. Feb. 15 1916; p 89; pp 2*; 35c.

——— *Utah Copper Co., Utah.* [Abst. from annual report. Mill and mine operations are given with costs and production for the same. Figures of interest in operating and finances are also given].—E. & M. J. April 22 1916; p 733; pp 1¾; 25c.

Milling, Smelting, Refining, Leaching, Etc.

Addicks, L.—*Metallurgy of Copper in* 1915. [Progress in leaching, roasting, blast and reverberatory furnaces, fume condensation, etc., are taken up].—E. & M. J. Jan. 8 1916; p 90; pp 2; 25c.

Addicks, L.—*The Development of Electrolytic Copper Refining.* [A paper read before the International Engg. Cong. revealing the methods of operation for generating current, the operation of the process and the thermic metallurgy connected therewith].—Mex. Mg. Jnl. Feb. 1916; p 48; pp 2; 35c.

Anderson, L. D.—*Mechanical Feeding as Applied to Silver-Lead Blast Furnaces.* [Reviews the operations and methods used by the U. S. Sm. & Ref. Co., Midvale, Utah].—E. & M. J. May 20 1916; p 885; pp 3¾*; 25c.

Austin, L. S.—*The Washoe Reduction Works, Anaconda, Montana.* [The concentrator is described and in connection with the description of the smelter, coal-dust burners used are described].—M. & S. P. Feb. 5 1916; p 195; pp 8¾*; 20c.

Austin, L. S.—*The Washoe Reduction Works, Anaconda.* [The concentration in classifiers, tables, etc., is described in detail and then their new flotation proc-

ess is taken up].—M. & S. P. Feb. 26 1916; p 304; pp 6*; 20c.

Austin, L. S.—*Washoe Reduction Works, Anaconda.* [This, the 3d part, describes the slime-flotation plant, zinc plant, copper leaching plant and acid and roasting plants in conjunction therewith].—M. & S. P. April 15 1916; p 547; pp 9*; 20c.

Browne, D. H.—*Notes on the Metallurgy of Copper.* [Current literature from several sources on operations at the larger copper mines of the world].—Canadian Mg. Inst. Bull. May 1916; p 458; pp 6½; 35c.

Coltman, R. W.—*The Iodide Method Applied to the Determination of Copper in the Presence of Tin.* [From the Jnl. of Industrial & Engg. Chem].—Chem. Eng. Jan. 1916; p 38; pp 1½; 35c.

Douglass, R. E.; Colley, R. T.—*Metallurgical Operations at the Braden Copper Co., Chile.* [A paper read before the Pan-American Scientific Cong. Descriptions of various operations in concentration, flotation and smelting are given].—E. & M. J. Feb. 12 1916; p 315; pp 6½*; 25c.

Eustis, F. A.—*Chloridizing and Leaching Plant of Virginia Smelting Co., Virginia.* [Pyrite cinders high in copper are chloridized and leached and those lower in copper are given an acid leach only].—E. & M. J. May 6 1916; p 803; pp 2½*; 25c.

Gill, P. L.—*Multiple and Series Electrolytic Copper Refining.* [A description and comparison of the two methods].—E. & M. J. Jan. 1 1916; p 9; pp 1½; 25c.

Higgins, W. C.—*Development and Equipment of the Walker Copper Mine, California.* [Mine development and milling operations are described. A table itemizing the production cost is also given].—S. L. Mg. Rev. Mar 30 1916; p 11; pp 3*; 25c.

Hixon, H. W.—*Electrothermic Zinc Smelting in Puebla, Mexico.* [A description of the operation of the Teziutlan Copper Co.'s plant is given. The ores run 4% copper and 10% zinc. The zinc is obtained as dust for cyanidation work].—E. & M. J. June 17 1916; p 1080; pp 1¼; 25c.

Hodgson, J. P.—*Operations of the Copper Queen Mines, Bisbee, Arizona.* [A general review of the company's doings during the recent past with regard to smelting, mining, etc.].—Mg. World Feb. 26 1916; p 429; pp 4¼*; 10c.

Hofman, H. O.—*Recent Progress in the Metallurgy of Copper.*—Jnl. Frank. Inst. Jan. 1916; p 83; pp 16*; 60c.

Jackling, D. C.—*A Year's Results at the Chino Copper Property, New Mexico.* [Abst. from the annual report. Milling and mining operations are given with figures on production and the itemized cost for the same].—Mg. World April 22 1916; p 787; pp 1¾; 10c.

Kerns, R. W.—*International Smelter at Miami, Arizona.* [A new plant treating flotation concentrates. No roasting is needed. The method of operation is described].—E. & M. J. Mar. 4 1916; p 421; pp 4*; 25c.

Koepping, D. D.—*The Electrolytic Determination of Copper in Copper-Manganese.* [Details for the method of procedure are given for the analysis of copper in the presence of large quantities of manganese].—Met. & Chem. Engg. April 15 1916; p 441; pp 1¼; 30c.

Laist, F.; Wiggin, A. E.—*Flotation Concentration at Anaconda, Mont.* [Follows the ore through the process, describing in detail the operations at each point].—Bull. A. I. M. E. Mar. 1916; p 549; pp 33*; 35c. Canadian Mg. Jnl. Mar. 1 1916; p 113; pp 3; 35c. Mg. World Mar. 4 1916; p 471; pp 7½*; 10c. M. & S. P. Mar. 25, 1916; p 446; pp 2*; 20c.

Lohr, F. D.—*Oil Flotation and Copper Leaching at the Washoe Smelter.* [For the most part a description of the new leaching and flotation plants, with some discussion].—Wis. Eng. Jan. 1916; p 166; pp 6; 35c.

Lyon, D. A.; Keeney, R. M.—*Feasibility of Western Electro-Metallurgy.* [Deals with iron, aluminum, zinc, copper, costs and other items of importance].—Jnl. of Elect. Power & Gas Mar. 25 1916; p 237; pp 3¾*; April 1 1916; p 262; pp 2; April 8; p 282; pp 3; April 15; p 296; pp 2½; April 29 1916; p 331; pp 3¾*; $1.75.

Magnus, B.—*The Sintering of Flotation Concentrates.* [Deals with the operation at Mount Morgan, Queensland, Australia. The ores contained about 2% copper and 7 dwt. gold. Dwight-Lloyd sintering machines were used].—E. & M. J. June 10 1916; p 1032; pp ¾*; 25c.

Mathewson, E. P.—*Recent Improvements in Concentration at the Washoe Reduction Works, Anaconda, Montana.* [A general detailed description of the crushing and concentration operations in connection with flotation. A flow-sheet is given].—Canadian Mg. Inst. Bull. June 1916; p 560; pp 9*; 35c.

Martin, A. H.—*The Flotation Process at Goldfield, Nevada.* [A concise detailed description of the plant, equipment, operation and results obtained. Callow pneumatic flotation cells are used].—Mg. World June 3 1916; p 1041; pp 1¼; 10c.

Orem, A. J.—*Changes at the Nevada-Douglas Leaching Plant, Nevada.* [An explanation of why it was necessary to crush the copper-ores to 60 instead of 20 mesh].—Mg. World Mar. 25 1916; p 609; pp 1¾*; 10c.

Overbeck, R. M.—*A Metallographic Study of the Copper Ores of Maryland.* [A lengthy review of the geology, genesis, mineralogy, petrology and nature of these deposits].—Eco. Geol. April 1916; p 151; pp 43*; 60c.

Pearce, J. A.—*Refining Cupriferous Precipitate.* [Copper is taken into solution by the cyanide. Hydrometallurgical methods of getting and separating it from this solution are dealt with].—M. & S. P. Feb. 19 1916; p 270; pp 2½; 20c.

Ricketts, L. D.—*Improved Mining and Metallurgy an Aid to Conservation.* [A paper read before the Pan-American Scientific Cong. reviewing the progress in mining methods, metallurgy and concentration of copper ores principally].—E. & M. J. Feb. 12 1916; p 291; pp 1½; 25c.

Rickard, T. A.—*Philip Argall and Metallurgical Progress.* [A review of Mr. Argall's life in the mining field, including experience with gold, tin, copper, etc.].—M. & S. P. Jan. 22 1916; p 119; pp 12*; 20c.

Rose, C. A.—*Metallurgical Operations at the Chile Exploration Co.* [A paper read before the Pan-American Scientific Cong. A complete description with drawings of their crushing and leaching plants].—E. & M. J. Feb. 12 1916; p 321; pp 5½*; 25c.

Scott, W. A.—*Mill Equipment of the Engels Copper Mining Co., California.* [Mineral Separation Co.'s flotation cells are used. Crushing and classifying are described and the mill handles about 500 tons].—Mg. World June 24 1916; p 1165; pp 2*; 10c.

Scott, W. A.—*Milling and Smelting at Humboldt, Arizona.* [The plant of the Consolidated Arizona Smelting Co. is reviewed, including its crushing, concentration, flotation and smelting equipment and operations].—Mg. World June 17 1916; p 1133; pp 1¼*; 10c.

Smith, R. W.—*Flotation Replaces Cyanide.* [Describes a practical system for gold-silver ores in copper sulphide. Milling costs and many details of operation are given].—E. & M. J. Jan. 15 1916; p 142; pp 2½*; 25c.

Stansfield, A.—*Electric Furnaces as Applied to Non-Ferrous Metallurgy.* [A paper read before the Institute of Metals and bearing on zinc, copper, nickel, lead, antimony, etc.].—Mg. Jnl. April 29 p 291; pp 1½; 35c.

Stitch, R. C.—*Smelting Copper F with Copper Ore, 46% and 7.5% Su* [A presidential address before the tralian Inst. of Mining Engineers de ing operations at the Mt. Lyell M & Railway Co.'s plant in Tasman Mg. World April 8 1916; p 700; 10c.

Thum, E. E.—*Cost Accounting i Construction and Operation of a C Smelter.* [A description of systems by the Anaconda Copper Co., with detailed cost figures].—Met. & (Engg. May 1 1916; p 529; pp 4¾*; 15 1916; p 573; pp 2½; June 1 19 660; pp 2¾; 90c.

Tupper, C. A.—*Flotation—Its Prc and Its Effects Upon Mill Design* review of the development in this od during 1915, most of which is de to copper ores and some to lead].- World Jan. 1 1916; p 1; pp 14*; 1(

Weber, M. C.—*Copper Cyanide P Solution.* [A paper read before the Institute].—Mex. Mg. Jnl. Feb. 19 44; pp 1¾; 35c.

Wise, J. B.—*The Roasting and phuric Acid Plants of the Braden C Co., Chile.* [A complete descriptic chemical reactions and general me of operations. There is also a flow of the acid plant].—Teniente Topics 1915; p 1; pp 8*; 35c. Mg. World 29 1916; p 823; pp 5¾*; 10c.

Yeatman, Pope.—*Mine of Chile ploration Co., Chuquicamata, Chile.* paper read before the Pan-American entific Cong. History, geology, or serves, leaching and the electric p plant are all taken up in fair deta E. & M. J. Feb. 12 1916; p 307; p 25c.

——— *Anaconda Works Plan Flow Sheet, Montana.*—E. & M. J. 25 1916; p 552; pp 1½*; 25c.

——— *Analysis and Assay of Zin tort Residue.* [Methods used in American Zinc Co.'s plant for dete ing carbon, zinc, iron, sulphur, lead, per, silica and silver].—Met. & (Engg. Feb. 15 1916; p 200; pp 1½; 5

——— *Chino Copper Co., New ico.* [Abst. from annual report. A eral review with figures on cost finances].—E. & M. J. April 22 191 736; pp 1; 25c.

——— *Concentrate and Calcine at Miami Smeltery, Arizona.* [Line d ings and description of the cars].— M. J. Mar. 25, 1916; p 563; pp 1*; 2

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-Monel Metal. [This
containing about 70%
copper].—Steam Feb.
½; 35c.

Handy, J. O.—*Research*
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can Soc. of Mech. Eng.
hat copper with the iron
o make the metal more
ospheric action].—I. Tr.
6; p 583; pp 9*; 25c.

; Handy, J. O.—*Research*
ion Resistance of Copper
ber of tests showing that
with steel makes the metal
to weather, etc.].—Jnl. Ind.
. Mar. 1916; p 209; pp 8*;

. D.; Peffer, E. L.—*Relation*
omposition and Density of
lutions of Copper Sulphate
ric Acid. [The work has a
ing on the electrolysis of cop-
S. Bur. of Stand.; Sci. Paper

n, G. E.—*Effect of Borax in*
usion. [Describes the method
tigation and gives curves and
owing the results obtained from
estigations].—E. & M. J. April 8
648; pp 2¼*; 25c.

on, F. H.—*Monel Metal.* [Besides discussing this nickel-copper alloy considerable is given regarding its source, which is the nickel field at Sudbury, Ont.].—M. & S. P. April 22 1916; p 585; pp 2*; 20c.

Perry, E. H.—*Interpretation of Assay Curves for Copper Drill Holes.* [Abst. of a paper read before the A. I. M. E. This is one of a series of papers to be read on the investigation of secondary enrichment].—E. & M. J. April 22 1916; p 726; pp 2½*; 25c.

Read, A. A.—*Some Tin-Aluminum-Copper Alloys.* [A paper read before the British Inst. of Metals. Various diagrams and tables of information are given showing composition and other characters].—Engg. April 7 1916; p 335; pp 1⅞*; 35c.

Read, T. T.—*Economics of the World's Supply of Copper.* [A paper read before the International Engg. Congress].—M. & S. P. Jan. 15 1916; p 93; pp 1¾*; 20c.

Ruder, W. E.—*The Brittleness of Annealed Copper.*—American Electrochem. Soc. Bull. p 191; pp 4; 35c.

Samuel, J. M.—*Methods of Measuring Dust Losses at Copper Queen Works, Arizona.* [Abst. of a paper to be read before the Arizona section of the A. I. M. E. Detailed description of methods employed for determining the losses carried as dust in the waste furnace gases].—E. & M. J. June 17 1916; p 1061; pp 2¾*; 25c.

Sebast, F. M.; Gray, G. L.—*The Electrical Resistances and Temperature Coefficients of Nickel-Copper-Chromium and Nickel-Copper-Manganese Alloys.* [Gives the results of laboratory tests].—American Electrochem. Soc. Bull. p 203; pp 10*; 35c.

Smith, C. E.—*Some Sources of Error in the Iodometric Determination of Copper.* [A method for chemical analysis and correct methods of obtaining the sample].—Met. & Chem. Engg. April 1 1916; p 379; pp 1¼; 30c.

Tolman, C. F., Jr.—*Observations on Certain Types of Chalcocite and Their Characteristic Etch Patterns.* [Besides describing the mineral and its peculiar occurrence many illustrations with explanations are given of the mineral and associated minerals as viewed under the microscope].—A. I. M. E. Bull. Feb. 1916; p 401; pp 33*; 35c.

Vogelstein, L.—*Buying and Selling Nonferrous Metals of South America.* [A paper read before the Pan-American Scientific Cong. Besides buying, selling and transportation it speaks of the incapacity of U. S. smelters driving the trade to

Geology of Limestone Mountain and Sherman Hill in Houghton County, Michigan.—Mich. Geol. Surv. Pub. 18; Geol. Ser. 15; pp 17*.

Doelter, C.—*Ueber die Genessi einiger Oesterreichisch-Ungarischer Kupferkieslagerstätten.* [The geology and genesis of a chalcopyrite deposit in Austria].—Montanist. Rund. Jan. 16 1916; p 29; pp 3½*; 35c.

Donnelly, T. F.—*Copper Deposits of San Cristobal, Santa Domingo, California.* [A paper read before the A. I. M. E.]—Mex. Mg. Jnl. Jan. 1916; p 8; pp 2; 35c.

Hore, R. E.—*Mineral Resources of Michigan.* [Tables on the production and values of mineral products. Also a complete geological review of the copper deposits].—Mich. Geol. Surv. Lansing; Pub. 19, Ser. 16; pp 351*.

Howard, L. O.—*Geology of the Cottonwood Districts, Utah.* [A lengthy description of the formation, topography and geological structure].—M. & S. P. April 15 1916; p 557; pp 5½*; 20c.

Knight, C. W.—*Origin of Sudbury Nickel Copper Deposits.* [Published by permission of the Provincial Geologist].—E. & M. J. May 6, 1916; p 811; pp 2*; 25c.

Krusch, Dr.—*Die Kupfervorkommen von Vastveit am Tinsjö und Einige Andere in Telemarken, ein Beitrag zur Genesis der Kupfer-Reichsulphide.* [On the genesis and geology of the copper deposits in the country to the north of Germany].—Metall & Erz Jan. 8 1916; p 1; pp 11*; 35c.

Krusch, D. P.—*Die Nutzbaren Lagerstätten Serbiens und Ihre Wirtschaftliche Bedeutung für die Zentralmächte.* [On the economic mineral deposits of Serbia]. Metall & Erz Feb. 22 1916; p 69; pp 9*; 35c.

Marstrander, R. — *The Mineral Resources of Uruguay, South America.* [The country has been exploited but little. Iron-manganese ore is of greatest importance, though gold and copper are found and there is possibility for lead, silver, coal and petroleum].—Mg. Mag. June 1916; p 315; pp 6*; 50c.

McConnell, R. G.—*Texada Island, British Columbia.* [Complete description of geology of formation and economic geology. Copper is the principal mineral and iron, gold, lime, and clay are produced in lesser quantities].—Canada Dept. of Mines; Memoir 58; pp 111*.

Probert, F. H.—*Surficial Indications of Copper.* [Discusses and describes in detail the chemistry of the oxidized zone].—M. & S. P. June 17 1916; p 893; pp 6¾*; 20c.

Probert, F. H.—*Surficial Indications of Copper.* [A study of surface geological features which would point to deposits of copper below the surface].—M. & S. P. May 6 1916; p 665; pp 7*; 20c.

Probert, F. H.—*Surficial Indications of Copper.* [Discusses topographic features and shows in what way they indicate the presence of ore. Appearance of the outcrops are considered in a similar way].—M. & S. P. June 3 1916; p 815; pp 6¼*; 20c.

Reinecke, Leopold.—*Ore Deposits of the Beaverdell Map-Area, British Columbia.* [This area has been prospected but little. The ores are gold-bearing chalcopyrite and galena-sphalerite-pyrite silver bearing ores].—Canadian Geol. Surv. Memoir 79; pp 178*.

Schofield, S. J.—*Geology of the Cranbrook Map-Area, British Columbia.* [Copper and silver-lead deposits are most important, though placer and vein gold, and clay are found].—Canada Dept. of Mines; Memoir 76; pp 245*.

Singewald, J. T., Jr.; Miller, B. L.—*Mining in Oriente Province, Cuba.* [A general description of the country and geology is given. Copper and iron mines are operated. Open-pit methods and flotation treatment of ores are used].—E. & M. J. April 1, 1916; p 587; pp 6*; 25c.

Singewald, J. T., Jr.; Miller, B. L.—*The Cerro de Pasco District, Peru.* [On the history of the camp, which was originally a silver camp. The geology of the large copper deposits is given the greater preference].—E. & M. J. June 10 1916; p 1015; pp 4*; 25c.

Stickney, A. W.—*Pyritic Copper Deposits at Kyshtim.* [From Economic Geology. A review of investigations of the deposits, giving details on the geology and genesis of the ores, which is by pyritic replacement].—Mg. Mag. Feb. 1916; p 77; pp 8½*; 50c.

Williams, M. Y.—*Arisaig-Antigonish District, Nova Scotia.* [A complete geological review of the district where copper, iron, oil-shale, gypsum and limestone are the principal economic deposits].—Canada Geol. Surv. Memoir 60; pp 173*.

Yeatman, Pope.—*Mine of Chile Exploration Co., Chuquicamata, Chile.* [A paper read before the Pan-American Scientific Cong. History, geology, ore reserves, leaching and the electric power plant are all taken up in fair detail].—E. & M. J. Feb. 12 1916; p 307; pp 5*; 25c.

——— *Summary Report of the Geological Survey, Department of Mines, Canada, 1915.* [In one volume separate

zinc, copper, silver, gold, nickel, asbestos, coal and iron].—Canada Dept. of Mines, Mines Branch Report 408; pp 28. Mg. World April 22 1916; p 781; pp 1½; 10c.

Paul, H. W.—*Mining in Japan in* 1915. [Production and discussion are given on manganese, pyrite, sulphur, gold, silver, copper, coal and iron].—E. & M. J. Jan. 15 1916; p 133; pp 1½; 25c.

Preston, T. H.—*The Urals and Their Mineral Wealth.* [Steel, copper, platinum, osmiridium and miscellaneous other minerals are reviewed as regards their industry and production].—Mg. Mag. April 1916; p 197; pp 5; 50c.

West, H. E.—*Vistes del Peru.* [A general description of the country and particularly on things related to the mining industry. Copper and silver are the principal metals produced].—M. & S. P. May 13 1916; p 704; pp 3*; 20c.

Willis, C. F.—*Mining in Arizona.* [Reviews the operation of the mines and production, principally copper and gold].—M. & S. P. Jan. 29 1916; p 171; pp 1½*; 20c.

Willis, C. F.—*Mining in Northern Arizona.* [A general review of gold, mercury and copper mining in that part of the state].—M. & S. P. April 29 1916; p 625; pp 1¾*; 20c.

Zalinski, E. R.—*Mining in Utah in* 1915. [Details on production and activities in gold, silver, zinc, copper and smelting industries].—E. & M. J. Jan. 15 1916; p 138; pp 2½; 25c.

——— *Chino Copper Co., New Mexico.* [Abst. from annual report. A general review with figures on cost and finances].—E. & M. J. April 22 1916; p 736; pp 1; 25c.

——— *Conversaciones Sobre Contribucion Minera.* [Some contributions and talks on the mineral industry of South American countries. Copper, lead and petroleum are the principal things considered].—Inf. y Mem. Soc. Ing. Peru Dec. 1915; p 535; pp 26; 75c.

——— *Copper,* 1915. [One page is given to a general discussion of the industry for the world and the remaining 1½ pages reviews the market by months for the U. S.].—E. & M. J. Jan. 8 1916; p 48; pp 2½; 25c.

——— *Copper Production in the United States in* 1915.—Mg. World Feb. 5 1916; p 245; pp 9*; 10c.

——— *Die Unter der Preussischen Berg-, Hutten-, und Salinenverwaltung Stehenden Staatswerke im Jahre* 1914. [Treats on the salt, iron, coal, copper and smelting industries operated by the Prussian government].—Glückauf Feb. 19 1916; p 150; pp 4¼; 50c.

——— *Metal Output of the Central States.* [With some discussion the values and quantity of lead, zinc, silver and copper produced are given].—M. & S. P. June 3 1916; p 821; pp 1; 20c.

——— *Metals.* [Reviews the tin and copper industry and production with respect to the British empire].—Mg. Jnl. Jan. 29 1916; p 65; pp 3¾; 35c.

——— *Mineral Production of Canada in* 1915. [Abst. from a preliminary report of the Canada Department of Mines].—Mg. World Mar. 11 1916; p 523; pp 2¼; 10c. E. & M. J. Mar. 11; p 483; pp 2; 25c.

——— *Mining in Rhodesia.* [Mining and milling operations in the copper and gold fields, giving costs and figures on production].—E. & M. J. Jan. 15 1916; p 136; pp 1¼; 25c.

——— *Nevada Consolidated Copper Co., Nevada.* [Abst. from annual report. Information on finances, prospecting, ore reserves, milling and smelting, and mining costs and operations].—E. & M. J. April 22 1916; p 734; pp 1¼; 25c.

——— *Production of American Mines Reaches Highest Point in* 1915. [Copper, iron and zinc show the largest gain].—Mg. Cong. Jnl. Jan. 1916; p 9; pp 2; 25c.

——— *Prosperous Year for Mines of the U. S.* [Abst. from the mid-year report of the U. S. G. S. on the production of copper, iron, zinc, silver and gold].—Mg. World Jan. 1 1916; p 51; pp 1½; 10c.

——— *Queensland Mining Industry.* [A review of 1915 made by the Under-Secretary for Mines. The condition of all things related to this department is taken up, including the production and condition of the several metal mining industries].—Queen. Govt. Mg. Jnl. Mar. 15 1916; p 101; pp 17; 35c.

——— *Ray Consolidated Copper Co., Arizona.* [Abst. from annual report. Information on mining and milling costs, reserves and production].—E. & M. J. April 22 1916; p 738; pp 1¼; 25c.

——— *The World's Copper Production in* 1915.—Mg. World Feb. 5 1916; p 242; pp 3*; 10c.

——— *Utah Copper Co., Utah.* [Abst. from annual report. Mill and mine operations are given with costs and production for the same. Figures of interest in operating and finances are also given].—E. & M. J. April 22 1916; p 733; pp 1¾; 25c.

CHAPTER IV.

LEAD, ZINC AND CADMIUM.

LEAD

Mines and Mining

Bell, R. N.—*Mining in Idaho.* [Reviews operations of the principal mines and smelters in the state].—E. & M. J. Jan. 22 1916; p 177; pp 3; 25c.

Bell, Robert N.—*Seventeenth Annual Report of the Mining Industry in Idaho for the Year* 1915. [Is a review of the usual kind made annually by the state mine inspector].—Boise, Idaho, Bur. of Mines; pp 134*.

Brinsmade, R. B.—*The Contact Mines of Vera Cruz.* [The geology of the formation is taken up with a general description of the country. Descriptions of different types of ore-bodies are then given and some information on historic operation of the mines].—Mex. Mg. Jnl. April 1916; p 119; pp 3*; 35c.

Denis, T. C.—*Mining in the Province of Quebec During* 1915. [Gives general information and production of asbestos, chrome, sulphur, copper, zinc, lead, magnesite and other less important minerals]. Canadian Mg. Inst. Bull. Jan. 1916; p 12; pp 3½; 35c.

Doelter, C.—*Die Mineralschätze der Türkei.* [Gives separate briefs on the mineral resources of Turkey, including chromium, iron, gold, antimony, silver, lead, mercury and copper].—Montanist. Rund. April 16 1916; p 217; pp 4; 35c.

Drysdale, C. W.—*Geology and Ore Deposits of Rossland, British Columbia.* [General and economic geology are reviewed in detail. Separate descriptions of mines are given and part II is on physiography of the district].—Canadian Geol. Surv. Mem. 77; pp 317*.

Engelder, O. G.—*Mining in Sardinia.* [A general account of the lead-zinc mines, their operation, production, etc. Labor wages, etc., are spoken of, and in this connection the law in regard to hiring and expelling employes is brought out].—M. & S. P. June 10 1916; p 862; pp 1; 20c.

Geary, W. P.—*Mining, Australasia in* 1915. [On the gold, silver, copper, lead and tin industries and production].—E. & M. J. Jan. 8 1916; p 126; pp 2; 25c.

Higgins, W. C.—*Resumption of Activities at the Howell Mine.* [Brings out a general review of the Cottonwood district, Utah].—S. L. Mg. Rev. April 1[illegible] 1916; p 15; pp 3*; 25c.

Hoffman, J. D.—*The Bawdwin Mines Burma, India.* [The mines are in the northern part of the province. They produce lead, silver and zinc as a complex ore. The history, geology, development of the mines and a brief on the treatment of the ore are given].—Mg. Mag. Mar. 1916; p 139; pp 8*; 50c.

Horwood, R. J.—*Broken Hill Underground Mining Methods.* [Discusses methods of mining, shaft operations, methods of supporting and timbering, ventilation, drilling and other details of interest].—A. I. M. E. Bull. Jan. 1916; p 65; pp 25*; 35c.

Jacobs, E.—*Mining in British Columbia in* 1915. [Gold, silver, copper, lead, zinc and other less important minerals are reviewed].—Canadian Mg. Jnl. Feb. 1 1916; p 70; pp 2½; 35c.

Jacobs, E.—*The Slocan District, British Columbia, in* 1916. [Speaks of the different properties in the district and their production of silver, lead and zinc].—Canadian Mg. Jnl. Feb. 15 1916; p 98; pp 2¼; 35c.

Jacobs, E.—*The Slocan District, British Columbia, in* 1915. [A general review of operations in the district].—Canadian Mg. Jnl. Mar. 1 1916; p 119; pp 2; 35c.

Lay, D.—*Operations in the Slocan District, British Columbia.* [The principal minerals of the district are zinc, silver and lead].—E. & M. J. Mar. 11 1916; p 464; pp 4½*; 25c.

McCaskey, H. D.—*Mineral Production of the United States in* 1914. [The subject is taken up separately by the minerals and collectively by production of the U. S.].—Min. Res. of U. S. I:A; pp 69.

McLeish, John.—*Annual Report on the Mineral Production of Canada,* 1914. [Each mineral is reported on separately. The imports, exports, production and condition of the trade are given].—Canada Dept. of Mines, Mines Branch No. 384; pp 362.

McLeish, John.—*Preliminary Report of the Mineral Production of Canada in* 1915. [The principal minerals are lead, zinc, copper, silver, gold, nickel, asbestos, coal and iron].—Canada Dept. of Mines, Mines Branch Report 408; pp 28. Mg. World April 22 1916; p 781; pp 1½; 10c.

Siebenthal, C. E.—*Lead in* 1914. [Production and operation in general and by state, for both mines and smelters of U. S. and some foreign countries].—Min. Res. of U. S. I:22; pp 29.

Singewald, J. T., Jr.; Miller, B. L.—*The Mining Industry of Peru.* [Besides talking of the metals mined the question of labor, law and transportation are spoken of].—E. & M. J. May 13 1916; p 845; pp 5½*; 25c.

Wittich, L. L.—*Joplin News-Herald's Zinc and Lead Handbook,* 1916. [Tables giving the zinc and lead production of the world and U. S. production of ores in the Joplin and surrounding districts is also given].—Joplin News-Herald; book; pp 90*; 25c.

——— *Conversaciones Sobre Contribucion Minera.* [Some contributions and talks on the mineral industry of South American countries. Copper, lead and petroleum are the principal things considered].—Inf. y Mem. Soc. Ing. Peru. Dec. 1915; p 535; pp 26; 75c.

——— *Lead in* 1915. [A review of 1915, including the market, production, lead oxides, smelters and southeastern Missouri lead district].—E. & M. J. Jan. 8 1916; p 56; pp 5*; 25c.

——— *Lead and Zinc Industry in the United States.* [1915 and some of the previous years].—Mg. World Feb. 5 1916; p 254; pp 7*; 10c.

——— *Mill and Smelter Construction in* 1915. [Editorial review on the progress in lead, zinc, copper, silver and gold smelters, mills and hydrometallurgical plants].—Mg. World Jan. 1 1916; p 17; pp 15*; 10c.

——— *Missouri's Mine Output in* 1915. [Abst. of an advance report of the U. S. G. S. Production figures are given and a review of the mine and smelter conditions and operations is made].—Mg. World June 17 1916; p 1128; pp ¾; 10c.

——— *Queensland Mining Industry.* [A review of 1915 made by the Under-Secretary for Mines. The condition of all things related to this department is taken up, including the production and condition of the several metal mining industries].—Queen. Govt. Mg. Jnl. Mar. 15 1916; p 101; pp 17; 35c.

Ore Dressing, Metallurgy, Chemistry, Etc.

Anderson, L. D.—*Mechanical Feeding as Applied to Silver-Lead Blast Furnaces.* [Reviews the operations and methods as used by the U. S. Sm. & Ref. Co., Midvale, Utah].—E. & M. J. May 20 1916; p 885; pp 3¾*; 25c.

Delano, L. A.—*Flotation Practice in Missouri.* [A description of flotation at the Bonne Terre mill of the St. Joseph Lead Co. Details on operation and machine construction and equipment are given].—M. & S. P. April 29 1916; p 633; pp 1; 20c.

Hofman, H. O.—*Metallurgy of Lead in* 1915. [Abstracts from important articles which appeared during the year on metallurgical practice].—E. & M. J. Jan. 8 1916; p 89; pp 2; 25c.

Hoffman, J. D.—*The Bawdwin Mines, Burma, India.* [The mines are in the northern part of the province. They produce lead, silver and zinc as a complex ore. The history, geology, development of the mines and a brief on the treatment of the ore are given].—Mg. Mag. Mar. 1916; p 139; pp 8*; 50c.

Ionides, S. A.—*The Dry Chlorination of Complex Ores.* [Speaks in particular of the system which was started but not finished by the Bunker Hill & Sullivan Mg. & Concent. Co., Ida. Lead and zinc sulphides were the principal ores].—M. & S. P. May 27 1916; p 781; pp 7*; 20c.

Later, E. P.—*The Electro-Deposition of Cobalt.* [Is rather on the electro-deposition of lead, giving details of procedure for the same].—Foundry April 1916; p 141; pp 2½; 25c.

Mostowitsch, W.—*The Decomposition and Reduction of Lead Sulphate at Elevated Temperatures.* [Much data of this nature is conflicting. This paper gives the results of various thermic tests along this line].—Bull. A. I. M. E. May 1916; p 871; pp 10; 35c.

Parmalee, J. G.—*Flotation Process at the Standard Mill, Silverton, B. C.* [The ores are zinc-lead containing much leaf silver. The Wyman pneumatic flotation machine is shown and described in detail. Assays of the concentrates are given with details of mill operation and flow sheet].—Mg. World June 17 1916; p 1121; pp 3*; 10c.

Parsons, A. B.—*Flotation at the Silver King and Daly Judge, Utah.* [A general description and discussion of operations at the two mills].—S. L. Mg. Rev. Feb. 29 1916; p 11; pp 4*; 25c.

Pulsifer, H. B.—*Recovery of Zinc Oxide from Lead Blast Furnace Slag.* [From Metallurgical and Chemical Engg.]—Mg. & Engg. Rev. Jan. 5 1916; p 88; pp 1½; 35c.

Regg, Gilbert.—*Zinc-Dust Precipitation* Tests. [A discussion on the solubility of cadmium, zinc and lead with each other while in the molten state and thus found in zinc dust used for precipitation from

cyanide solutions].—Mg. World Jan. 15 1916; p 122; pp 1; 10c.

Rickard, T. A.—*The Selby Lead Smelter.* [Describes the equipment and operation of this plant in California in fair detail].—M. & S. P. April 8 1916; p 505; pp 5¾; 20c.

Stansfield, A.—*Electric Furnaces as Applied to Non-Ferrous Metallurgy.* [A paper read before the Institute of Metals and bearing on zinc, copper, nickel, lead, antimony, etc.].—Mg. Jnl. April 29 1916; p 291; pp 1½; 35c.

Torossian, G.—*A Simple and Rapid Determination of Lead.*—Jnl. of Indst. & Engg. Chem. April 1916; p 331; pp ¾; 60c.

Tupper, C. A.—*Flotation—Its Progress and Its Effects Upon Mill Design.* [A review of the development in this method during 1915, most of which is devoted to copper ores and some to lead].—Mg. World Jan. 1 1916; p 1; pp 14*; 10c.

Wright, C. A.—*Flotation Tests on Joplin Lead and Zinc Ores.* [Abst. from a preliminary report by the U. S. Bureau of Mines. Results of the tests are not given in detail, but rather have been used to show the practicability of using this method on the ores].—Mg. World April 15 1916; p 737; pp 2; 10c.

——— *Analysis and Assay of Zinc Retort Residue.* [Methods used in the American Zinc Co.'s plant for determining carbon, zinc, iron, sulphur, lead, copper, silica and silver].—Met. & Chem. Engg. Feb. 15 1916; p 200; pp 1½; 30c.

——— *Hydrometallurgy of Zinc and Lead in* 1915. [A contribution from the Met. Research Department, Univ. of Utah, giving a resume of operations and advances in this process during the year].—Met. & Chem. Engg. Jan. 1 1916; p 30; pp 2¾; 30c.

——— *Lead Smelting Data of the Herculaneum Plant, Missouri.* [One table is given showing in detail the materials smelted and products resulting and the other shows the same for materials used and produced in the smaller units of the smelter].—E. & M. J. June 3 1916; p 985; pp 1; 25c.

——— *Mill and Smelter Construction in* 1915. [Editorial review on the progress in lead, zinc, copper, silver and gold smelters, mills and hydrometallurgical plants].—Mg. World Jan. 1 1916; p 17; pp 15*; 10c.

——— *Missouri's Mine Output in* 1915. [Abst. of an advance report of the U. S. G. S. Production figures are given and a review of the mine and smelter conditions and operations is made].—Mg. World June 17 1916; p 1128; pp ¾; 10c.

——— *The Double Roasting Process at East Helena, Montana.* [A detailed description of the process is given with detailed figures on the results obtained at various stages in the process. Lead-zinc ores are treated].—M. & S. P. May 6 1916; p 672; pp 4½; 20c.

Geology

Allan, J. A.—*Geology of Field Map-Area, British Columbia and Alberta.* [A very complete description of the geology of the area is given. To date the lead-zinc-silver and copper deposits are of no noted importance, though some properties are operating there].—Canadian Geol. Surv. Memoir 55; pp 312*.

Avery, P. W.—*Galena in Gold and Silver Ores.* [Treats on the concentration of these ores found in the El Oro mines, Mexico].—E. & M. J. May 6 1916; p 819; pp 1¼; 25c.

Brinsmade, R. B.—*The Contact Mines of Vera Cruz.* [The geology of the formation is taken up with a general description of the country. Descriptions of different types of ore-bodies are then given and some information on historic operation of the mines].—Mex. Mg. Jnl. April 1916; p 119; pp 3*; 35c.

Butler, B. S.; Heikes, V. C.—*Notes on the Promonotory District, Utah.* [Geology shows quartzite, shale and limestone formation and there are copper, lead and zinc deposits].—U. S. G. S. Bull. 640-A; pp 10*.

Drysdale, C. W.—*Geology and Ore Deposits of Rossland, British Columbia.* [General and economic geology are reviewed in detail. Separate descriptions of mines are given and part II is on physiography of the district].—Canadian Geol. Surv. Mem. 77; pp 317*.

Hoffman, J. D.—*The Bawdwin Mines, Burma, India.* [The mines are in the northern part of the province. They produce lead, silver and zinc as a complex ore. The history, geology, development of the mines and a brief on the treatment of the ore are given].—Mg. Mag. Mar. 1916; p 139; pp 8*; 50c.

Howard, L. O.—*Geology of the Cottonwood Districts, Utah.* [A lengthy description of the formation, topography and geological structure].—M. & S. P. April 15 1916; p 557; pp 5½*; 20c.

Krusch, P.—*Die Erz- und Phosphatlagerstätten Belgiens.* [On the ore and phosphate deposits of Belgium, including

Siebenthal, C. E.—*Lead in* 1914. [Production and operation in general and by state, for both mines and smelters of U. S. and some foreign countries].—Min. Res. of U. S. I:22; pp 29.

Singewald, J. T., Jr.; Miller, B. L.—*The Mining Industry of Peru.* [Besides talking of the metals mined the question of labor, law and transportation are spoken of].—E. & M. J. May 13 1916; p 845; pp 5½*; 25c.

Wittich, L. L.—*Joplin News-Herald's Zinc and Lead Handbook,* 1916. [Tables giving the zinc and lead production of the world and U. S. production of ores in the Joplin and surrounding districts is also given].—Joplin News-Herald; book; pp 90*; 25c.

——— *Conversaciones Sobre Contribucion Minera.* [Some contributions and talks on the mineral industry of South American countries. Copper, lead and petroleum are the principal things considered].—Inf. y Mem. Soc. Ing. Peru. Dec. 1915; p 535; pp 26; 75c.

——— *Lead in* 1915. [A review of 1915, including the market, production, lead oxides, smelters and southeastern Missouri lead district].—E. & M. J. Jan. 8 1916; p 56; pp 5*; 25c.

——— *Lead and Zinc Industry in the United States.* [1915 and some of the previous years].—Mg. World Feb. 5 1916; p 254; pp 7*; 10c.

——— *Mill and Smelter Construction in* 1915. [Editorial review on the progress in lead, zinc, copper, silver and gold smelters, mills and hydrometallurgical plants].—Mg. World Jan. 1 1916; p 17; pp 15*; 10c.

——— *Missouri's Mine Output in* 1915. [Abst. of an advance report of the U. S. G. S. Production figures are given and a review of the mine and smelter conditions and operations is made].—Mg. World June 17 1916; p 1128; pp ¾; 10c.

——— *Queensland Mining Industry.* [A review of 1915 made by the Under-Secretary for Mines. The condition of all things related to this department is taken up, including the production and condition of the several metal mining industries].—Queen. Govt. Mg. Jnl. Mar. 15 1916; p 101; pp 17; 35c.

Ore Dressing, Metallurgy, Chemistry, Etc.

Anderson, L. D.—*Mechanical Feeding as Applied to Silver-Lead Blast Furnaces.* [Reviews the operations and methods as used by the U. S. Sm. & Ref. Co., Midvale, Utah].—E. & M. J. May 20 1916; p 885; pp 3¾*; 25c.

Delano, L. A.—*Flotation Practice in Missouri.* [A description of flotation at the Bonne Terre mill of the St. Joseph Lead Co. Details on operation and machine construction and equipment are given].—M. & S. P. April 29 1916; p 633; pp 1; 20c.

Hofman, H. O.—*Metallurgy of Lead in* 1915. [Abstracts from important articles which appeared during the year on metallurgical practice].—E. & M. J. Jan. 8 1916; p 89; pp 2; 25c.

Hoffman, J. D.—*The Bawdwin Mines, Burma, India.* [The mines are in the northern part of the province. They produce lead, silver and zinc as a complex ore. The history, geology, development of the mines and a brief on the treatment of the ore are given].—Mg. Mag. Mar. 1916; p 139; pp 8*; 50c.

Ionides, S. A.—*The Dry Chlorination of Complex Ores.* [Speaks in particular of the system which was started but not finished by the Bunker Hill & Sullivan Mg. & Concent. Co., Ida. Lead and zinc sulphides were the principal ores].—M. & S. P. May 27 1916; p 781; pp 7*; 20c.

Later, E. P.—*The Electro-Deposition of Cobalt.* [Is rather on the electro-deposition of lead, giving details of procedure for the same].—Foundry April 1916; p 141; pp 2½; 25c.

Mostowitsch, W.—*The Decomposition and Reduction of Lead Sulphate at Elevated Temperatures.* [Much data of this nature is conflicting. This paper gives the results of various thermic tests along this line].—Bull. A. I. M. E. May 1916; p 871; pp 10; 35c.

Parmalee, J. G.—*Flotation Process at the Standard Mill, Silverton, B. C.* [The ores are zinc-lead containing much leaf silver. The Wyman pneumatic flotation machine is shown and described in detail. Assays of the concentrates are given with details of mill operation and flow sheet].—Mg. World June 17 1916; p 1121; pp 3*; 10c.

Parsons, A. B.—*Flotation at the Silver King and Daly Judge, Utah.* [A general description and discussion of operations at the two mills].—S. L. Mg. Rev. Feb. 29 1916; p 11; pp 4*; 25c.

Pulsifer, H. B.—*Recovery of Zinc Oxide from Lead Blast Furnace Slag.* [From Metallurgical and Chemical Engg.]—Mg. & Engg. Rev. Jan. 5 1916; p 88; pp 1½; 35c.

Regg, Gilbert.—*Zinc-Dust Precipitation* Tests. [A discussion on the solubility of cadmium, zinc and lead with each other while in the molten state and thus found in zinc dust used for precipitation from

cyanide solutions].—Mg. World Jan. 15 1916; p 122; pp 1; 10c.

Rickard, T. A.—*The Selby Lead Smelter.* [Describes the equipment and operation of this plant in California in fair detail].—M. & S. P. April 8 1916; p 505; pp 5¾; 20c.

Stansfield, A.—*Electric Furnaces as Applied to Non-Ferrous Metallurgy.* [A paper read before the Institute of Metals and bearing on zinc, copper, nickel, lead, antimony, etc.].—Mg. Jnl. April 29 1916; p 291; pp 1½; 35c.

Torossian, G.—*A Simple and Rapid Determination of Lead.*—Jnl. of Indst. & Engg. Chem. April 1916; p 331; pp ¾; 60c.

Tupper, C. A.—*Flotation—Its Progress and Its Effects Upon Mill Design.* [A review of the development in this method during 1915, most of which is devoted to copper ores and some to lead].—Mg. World Jan. 1 1916; p 1; pp 14*; 10c.

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——— *Analysis and Assay of Zinc Retort Residue.* [Methods used in the American Zinc Co.'s plant for determining carbon, zinc, iron, sulphur, lead, copper, silica and silver].—Met. & Chem. Engg. Feb. 15 1916; p 200; pp 1½; 30c.

——— *Hydrometallurgy of Zinc and Lead in* 1915. [A contribution from the Met. Research Department, Univ. of Utah, giving a resume of operations and advances in this process during the year].—Met. & Chem. Engg. Jan. 1 1916; p 30; pp 2¾; 30c.

——— *Lead Smelting Data of the Herculaneum Plant, Missouri.* [One table is given showing in detail the materials smelted and products resulting and the other shows the same for materials used and produced in the smaller units of the smelter].—E. & M. J. June 3 1916; p 985; pp 1; 25c.

——— *Mill and Smelter Construction in* 1915. [Editorial review on the progress in lead, zinc, copper, silver and gold smelters, mills and hydrometallurgical plants].—Mg. World Jan. 1 1916; p 17; pp 15*; 10c.

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——— *The Double Roasting Process at East Helena, Montana.* [A detailed description of the process is given with detailed figures on the results obtained at various stages in the process. Lead-zinc ores are treated].—M. & S. P. May 6 1916; p 672; pp 4½; 20c.

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Allan, J. A.—*Geology of Field Map-Area, British Columbia and Alberta.* [A very complete description of the geology of the area is given. To date the lead-zinc-silver and copper deposits are of no noted importance, though some properties are operating there].—Canadian Geol. Surv. Memoir 55; pp 312*.

Avery, P. W.—*Galena in Gold and Silver Ores.* [Treats on the concentration of these ores found in the El Oro mines, Mexico].—E. & M. J. May 6 1916; p 819; pp 1¼; 25c.

Brinsmade, R. B.—*The Contact Mines of Vera Cruz.* [The geology of the formation is taken up with a general description of the country. Descriptions of different types of ore-bodies are then given and some information on historic operation of the mines].—Mex. Mg. Jnl. April 1916; p 119; pp 3*; 35c.

Butler, B. S.; Heikes, V. C.—*Notes on the Promonotory District, Utah.* [Geology shows quartzite, shale and limestone formation and there are copper, lead and zinc deposits].—U. S. G. S. Bull. 640-A; pp 10*.

Drysdale, C. W.—*Geology and Ore Deposits of Rossland, British Columbia.* [General and economic geology are reviewed in detail. Separate descriptions of mines are given and part II is on physiography of the district].—Canadian Geol. Surv. Mem. 77; pp 317*.

Hoffman, J. D.—*The Bawdwin Mines, Burma, India.* [The mines are in the northern part of the province. They produce lead, silver and zinc as a complex ore. The history, geology, development of the mines and a brief on the treatment of the ore are given].—Mg. Mag. Mar. 1916; p 139; pp 8*; 50c.

Howard, L. O.—*Geology of the Cottonwood Districts, Utah.* [A lengthy description of the formation, topography and geological structure].—M. & S. P. April 15 1916; p 557; pp 5½*; 20c.

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Means, A. H.—*New Mineral Occurrences from the Tintic District, Utah.* [Six new minerals of lead, zinc and bismuth are described and a geochemical treatise is given on their origin].—Amer. Jnl. of Sci. Jan. 1916; p 125; pp 6; $1.10.

Reinecke, Leopold.—*Ore Deposits of the Beaverdell Map-Area, British Columbia.* [This area has been prospected but little. The ores are gold-bearing chalcopyrite and galena-sphalerite-pyrite silver bearing ores].—Canadian Geol. Surv. Memoir 79; pp 178*.

Ropes, L. S.—*Observations on Marysville District, Montana.* [Brings out the mineralogical peculiarities and geological peculiarities of the formation in the district].—Mg. World Feb. 19 1916; p 395; pp 1¼; 10c.

Schofield, S. J.—*Geology of the Cranbrook Map-Area, British Columbia.* [Copper and silver-lead deposits are most important, though placer and vein gold, and clay are found].—Canada Dept. of Mines; Memoir 76; pp 245*.

Schoskel, B. H.—*History of the Development of Jo Daviess County, Illinois.* [Is given in connection with the geology and geography of this zinc-lead bearing district].—Ill. Geol. Surv. Bull. 26; pp 233*.

Siebenthal, C. E.—*Origin of the Zinc and Lead Deposits of the Joplin Region, Missouri.* [Is confined to the genesis of the ores and discussion of the reasons for the theory given. The association of the minerals and enrichment theories are also taken up].—U. S. G. S. Bull. 606; pp 283*.

Trowbridge, A. C.; Shaw, E. W.—*Geology and Geography of the Galena and Elizabeth Quadrangles.* [This includes the zinc deposits of the Wisconsin-Illinois district and is accompanied with an account of the history of the development of this section of the country].—Ill. Geol. Surv. Bull. 26; pp 233*.

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——— *Summary Report of the Geological Survey, Department of Mines, Canada,* 1915. [In one volume separate reports made during the year on different districts and topics are given].—Canadian Geol. Surv. Sessional Paper 26; pp 307*.

——— *The Cottonwood-American Fork Mining Region, Utah.* [A brief description, with a geological map of the district from the U. S. G. S.].—Mg. World Mar. 11 1916; p 521; pp 1¼*; 10c.

Miscellaneous

Bell, N. M.—*On the Anodic Solution of Lead.*—Trans. of Faraday Soc. Oct. 1915; p 79; pp 12*; 60c.

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Singewald, J. T., Jr.; Miller, B. L.—*The Mining Industry of Peru.* [Besides talking of the metals mined the question of labor, law and transportation are spoken of].—E. & M. J. May 13 1916; p 845; pp 5½*; 25c.

Whithead, W. L.—*The Paragenesis of Certain Sulphide Intergrowths.* [Micro photographs are given and the principal sulphides considered are of copper, though lead and zinc are taken up also].—Econ. Geol. Jan. 1916; p 1; pp 13*; 60c.

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——— *The Metals.* [A review of the general conditions and production in the lead and spelter industries of the world].—Mg. Jnl. Feb. 5 1916; p 82; pp 3; 35c.

Production

Bell, R. N.—Mining in Idaho. [Reviews operations of the principal mines

Schoskel, B. H.—*History of the Development of Jo Daviess County, Illinois.* [Is given in connection with the geology and geography of this zinc-lead bearing district].—Ill. Geol. Surv. Bull. 26; pp 233*.

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Zalinski, E. R.—*Mining in Utah in* 1915. [Details on production and activities in gold, silver, zinc, copper and smelting industries.—E. & M. J. Jan. 15 1916; p 138; pp 2½; 25c.

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Delano, L. A.—*Flotation Practice in Missouri.* [A description of flotation at the Bonne Terre mill of the St. Joseph Lead Co. Details on operation and machine construction and equipment are given].—M. & S. P. April 29 1916; p 633; pp 1; 20c.

De Lumen, M.—*The Roasting of Blende.* [The effect of constituents of blende on sulphur elimination and roasting process. The Hasenclever, Delplace, Hegler, McDougal and Spirlet furnaces are described. Comments on the gases for sulphuric acid manufacture in England, Belgium and Germany].—E. & M. J. June 10 1916; p 1021; pp 3¾; 25c.

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Hixon, H. W.—*Electrothermic Zinc Smelting in Puebla, Mexico.* [A description of their operation of the Teziutlan Copper Co.'s plant is given. The ores run 4% copper and 10% zinc. The zinc is obtained as dust for cyanidation work]. E. & M. J. June 17 1916; p 1080; pp 1¼; 25c.

Hoffman, J. D.—*The Bawdwin Mines, Burma, India.* [The mines are in the northern part of the province. They produce lead, silver and zinc as a complex ore. The history, geology, development of the mines and a brief on the treatment of the ore are given].—Mg. Mag. Mar. 1916; p 139; pp 8*; 50c.

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Liebig, M.—*Das Ununterbrochene Zinkgewinnungsverfahren nach Roitzheim und Remy, Deutchland.* [Describes the method of continuous zinc smelting at Roitzheim and Remy, Germany].—Metall & Erz Mar. 22 1916; p 143; pp 13*; 50c.

Liebig, M.—*The Roitsheim-Remy Continuous Zinc Distillation Process.* [Translated from German in Metal & Erz. A complete and detailed description is given of this process, equipment required and methods and costs of operation].—Met. & Chem. Engg. June 1 1916; p 625; pp 4½*; 30c.

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Motherwell, A. B.—*Electrolytic Zinc.* [The Bradley-Williams process is described. Here an acidified solution of

zinc sulphate takes the zinc into solution from the ores and the zinc precipitated from it by electrolytic methods].—M. & S. P. Mar. 18 1916; p 401; pp 2½*; 20c.

Parmalee, J. G.—*Flotation Process at the Standard Mill, Silverton, B. C.* [The ores are zinc-lead containing much leaf silver. The Wyman pneumatic flotation machine is shown and described in detail. Assays of the concentrates are given, with details of mill operation and flow sheet].—Mg. World June 17 1916; p 1121; pp 3*; 10c.

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Spring, L. W.—*The Open Hearth Process.* [A talk on various methods employed in the process, with a practical talk on the theory of the same].—Valve World June 1916; p 197; pp 8¼*; 20c.

Stansfield, Alfred.—*Electric Furnaces as Applied to Non-Ferrous Metallurgy.* [A paper read before the Institute of Metals on the use of the furnace for refining aluminum, magnesium, zinc, sodium, potassium, calcium, barium, strontium and cerium].—Mg. Jnl. April 8 1916; p 233; pp 2; April 29 1916; p 291; pp 1½; 70c.

Tupper, C. A.—*Flotation—Its Progress and Its Effects Upon Mill Design.* [A review of the development in this method during 1915, most of which is devoted to copper ores and some to lead].—Mg. World Jan. 1 1916; p 1; pp 14*; 10c.

Vreeland, G. W.—*Distribution of Raw Materials in the Blast Furnace.* [A paper read before the Amer. Iron & Steel Inst. The information is given as the result of many tests. Suggestions are also given regarding charging as it is related to the correct distribution of materials. Many of the test results are plotted on curves].—Iron Age June 1 1916; p 1332; pp 6*; 30c.

Wherry, H. P.—*Concentration of Zinc Ore in Wisconsin.* [A complete description and discussion of the new and old system used at the Thompson mine of the Field Mg. & M. Co. Flow sheets are given with the results of tests on which were based certain selections made].—M. & S. P. April 22 1916; p 587; pp 5½*; 20c.

Wittich, L. L.—*New Granby Concentrator.* [A view of the plant with description and flow-sheet given].—E. & M. J. Mar. 25 1916; p 557; pp 1¼*; 25c.

Wright, C. A.—*Flotation Tests on Joplin Lead and Zinc Ores.* [Abst. from a preliminary report by the U. S. Bureau of Mines. Results of the tests are not given in detail, but rather have been used to show the practicability of using this method on the ores].—Mg. World April 15 1916; p 737; pp 2; 10c.

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——— *Flotation at Broken Hill, N. S. W., Australia.* [Abst. from the Mining & Engineering Review].—E. & M. J. Jan. 22 1916; p 231; pp 1; 25c.

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Daly, R. A.—*Geology of the Kiruna District, Sweden.* [Brings out a theory

Schoskel, B. H.—*History of the Development of Jo Daviess County, Illinois.* [Is given in connection with the geology and geography of this zinc-lead bearing district].—Ill. Geol. Surv. Bull. 26; pp 233*.

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Uhler, H. S.; Browning.—*On a Gallium-Indium Alloy.* [The alloy was discovered as globules in the lead residue of zinc distillation. Describes the results of investigation of this alloy].—Amr. Jnl. of Sci. April 1916; p 351; pp 4; 60c.

Whithead, W. L.—*The Paragenesis of Certain Sulphide Intergrowths.* [Micro photographs are given and the principal sulphides considered are of copper, though lead and zinc are taken up also].—Econ. Geol. Jan. 1916; p 1; pp 13*; 60c.

——— *Italian Mineral Industry.* [Gives the production, prices, etc., prevailing in the several mineral industries of the country, principal of which are sulphur, zinc, iron ore, mercury and other less important minerals].—Mg. Jnl. April 29 1916; p 286; pp 2; 35c.

——— *The Base Metal Industry.* [Discusses the subject with regard to British and German interests with particular reference to Australia].—Jnl. Chamber of Mines West Aust. Dec. 31 1915; p 281; pp 3½; 50c.

——— *Zinc Ores, Their Occurrence and Utilization.* [Descriptions of the deposits in various countries are given briefly. Prices of the ore and methods of computing its value are given, as well as costs of smelting and methods for the same].—Bull. Imperial Inst., London; p 44; pp 37; 75c.

Production

Bell, R. N.—*Mining in Idaho.* [Reviews operations of the principal mines and smelters in the state].—E. & M. J. Jan. 22 1916; p 177; pp 3; 25c.

Bell, Robert N.—*Seventeenth Annual Report of the Mining Industry in Idaho for the Year* 1915. [Is a review of the usual kind made annually by the state mine inspector].—Boise, Idaho, Bur. of Mines; pp 134*.

Denis, T. C.—*Mining in the Province of Quebec During* 1915. [Gives general information and production of asbestos, chrome, sulphur, copper, zinc, lead, magensite and other less important minerals].—Canadian Mg. Inst. Bull. Jan. 1916; p 12; pp 3½; 35c .

Hill, J. M.—*Gold, Silver, Copper, Lead and Zinc in the Eastern States in* 1915. [The industry and production is reviewed separately for the entire group of states by metals and is later reviewed by states and counties].—Min. Res. of U. S. I:2; pp 14.

Howard, L. O.—*Mining in Utah.* [A review of the present day situation in the zinc industry principally].—M. & S. P. Jan. 22 1916; p 132*; pp 1½*; 20c.

Ingalls, W. R.—*Spelter Statistics for* 1915. [Includes 1915 and 4 years previous].—E. & M. J. April 1 1916; p 606; pp 6; 25c.

Jacobs, E.—*Mining in British Columbia in* 1915. [Gold, silver, copper, lead, zinc and other less important minerals are reviewed].—Canadian Mg. Jnl. Feb. 1 1916; p 70; pp 2½; 35c.

Jacobs, E.—*The Slocan District, British Columbia in* 1916. [Speaks of the different properties in the district and their production of silver, lead and zinc].—Canadian Mg. Jnl. Feb. 15 1916; p 98; pp 2¼; 35c.

Jacobs, E.—*The Slocan District, British Columbia in* 1915. [A general review of operations in the district].—Canadian Mg. Jnl. Mar. 1 1916; p 119; pp 2; 35c.

McCaskey, H. D.—*Mineral Production of the United States in* 1914. [The subject is taken up separately by the minerals and collectively by production of the U. S.].—Min. Res. of U. S. I:A; pp 69.

McLeish, John.—*Annual Report on the Mineral Production of Canada,* 1914. [Each mineral is reported on separately. The imports, exports, production and condition of the trade are given].—Canada Dept. of Mines, Mines Branch, No. 384; pp 362.

McLeish, John.—*Preliminary Report of the Mineral Production of Canada in* 1915. [The principal minerals are lead, zinc, copper, silver, gold, nickel, asbestos, coal and iron].—Canada Dept. of Mines, Mines Branch Report 408; pp 28. Mg. World April 22 1916; p 781; pp 1½; 10c.

Moulden, J. C.—*Zinc, Its Production and Industrial Applications.* [The different kinds of zinc are taken up and their uses reviewed. A separate table is given showing the many alloys and their proportions and followed by an account of zinc production for 1913 to 1845].—Jnl. of Royal Soc. of Arts June 2 1916; p 517; pp 15*; 35c.

Muth, E. G.—*Great Increase in Spelter*

other than magmatic segregation of the deposits in the quartz porphyry].—Eco. Geol. May 1916; pp 294.

Drysdale, C. W.—*Geology and Ore Deposits of Rossland, British Columbia.* [General and economic geology are reviewed in detail. Separate descriptions of mines are given and part II is on physiography of the district].—Canadian Geol. Surv. Mem. 77; pp 317*.

Engelder, O. G.—*Mining in Sardinia.* [A general account of the lead-zinc mines, their operation, production, etc. Labor, wages, etc., are spoken of and in this connection the law in regard to hiring and expelling employes is brought out].—M. & S. P. June 10 1916; p 862; pp 1; 20c.

Hatmaker, B. J.—*St. Lawrence County, New York, Zinc Field.* [This field, which is already a great producer of talc, is destined to become a large zinc producer also].—Mg. World April 8 1916; p 689; pp 1¾*; 10c.

Hoffman, J. D.—*The Bawdwin Mines, Burma, India.* [The mines are in the northern part of the province. They produce, lead, silver and zinc as a complex ore. The history, geology, development of the mines and a brief on the treatment of the ore are given].—Mg. Mag. Mar. 1916; p 139; pp 8*; 50c.

Krusch, P.—*Die Erz- und Phosphatlagerstätten Belgiens.* On the ore and phosphate deposits of Belgium, including lead, zinc, iron, coal and manganese].—Glückauf Mar. 4 1916; p 185; pp 5*; Mar. 11; 6 210; pp 9*; $1.

Krusch, D. P.—*Die Nutzbaren Lagerstätten Serbiens und Ihre Wirtschaftliche Bedeutung für die Zentralmächte.* [On the economic mineral deposits of Serbia]. Metall & Erz Feb. 22 1916; p 69; pp 9*; 35c.

Lay, D.—*Operations in the Slocan District, British Columbia.* [The principal minerals of the district are zinc, silver and lead].—E. & M. J. Mar. 11 1916; p 464; pp 4½; 25c.

Means, A. H.—*New Mineral Occurrences from the Tintic District, Utah.* [Six new minerals of lead, zinc and bismuth are described and a geochemical treatise is given on their origin].—Amer. Jnl. of Sci. Jan. 1916; p 125; pp 6; $1.10.

Reinecke, Leopold.—*Ore Deposits of the Beaverdell Map-Area, British Columbia.* [This area has been prospected but little. The ores are gold-bearing chalcopyrite and galena-sphalerite-pyrite silver bearing ores].—Canadian Geol. Surv. Memoir 79; pp 178*.

Ropes, L. S.—*Observations on Marysville District, Montana.* [Brings ou mineralogical peculiarities and geolc peculiarities of the formation in the trict].—Mg. World Feb. 19 1916; p pp 1¾; 10c.

Schoskel, B. H.—*History of the D opment of Jo Daviess County, Ill* [Is given in connection with the ge and geography of this zinc-lead be district].—Ill. Geol. Surv. Bull. 26 233*.

Siebenthal, C. E.—*Origin of the and Lead Deposits of the Joplin Re Missouri.* [Is confined to the genes the ores and discussion of the rea for the theory given. The associatio the minerals and enrichment theorie also taken up].—U. S. G. S. Bull. pp 283*.

Trowbridge, A. C.; Shaw, E. *Geology and Geography of the Gc and Elizabeth Quadrangles.* [This cludes the zinc deposits of the Wisco Illinois district and is accompanied an account of the history of the dev ment of this section of the country]. Geol. Surv. Bull. 26; pp 233*.

Uglow, W. L.—*Ore Genesis and tact Metamorphism at the Long Zinc Mine, Ontario.* [Description the rocks and minerals, their distrib and genesis are given in connection a description of the surrounding fo tion].—Eco. Geol. May 1916; p 231 15*; 60c.

——— *Origin of the Joplin Zinc Lead Deposits, Missouri.* [The ge of these ores is a thing undecided u —Mg. World Jan. 22 1916; p 155; p 10c.

Miscellaneous

Hillebrand, W. F.; Scherrer, J. *Recovery of Gallium from Spelter i United States.*—Jnl. Ind. & Eng. (Mar. 1916; p 225; pp 1; 60c.

Karr, C. P.; Rawdon, H. S.—S *ard Test Specimens of Zinc Bronze.* first part is on the testing for mech properties and the second on the n structure of the alloy].—U. S. Bu Stand. Tech. Paper 59; pp 67*.

Moulden, J. C.—*Zinc, Its Prodi and Industrial Applications.* [The (ent kinds of zinc are taken up and uses reviewed. A separate table is showing the many alloys and their portions and followed by an accou zinc production for 1913 to 1845]. of Royal Soc. of Arts June 2 19 517; pp 15*; 35c.

Shellshear, W.—*Selling Lead and Concentrates.* [Notes on selling lea

ores and concentrates. Some information in regard to flotation and thermic methods as related to selling are given. All is based on Australian practice].—Mg. & Engg. Rev. May 5 1916; p 190; pp 3½*; 35c.

Siebenthal, C. E.—*The Conservation of Lead and Zinc.* [A paper read before the Pan-American Scientific Soc. It is confined to conservation in smelting and concentrating the ores].—Mg. World Feb. 19 1916; p 393; pp 2; 10c.

Uhler, H. S.; Browning.—*On a Gallium-Indium Alloy.* [The alloy was discovered as globules in the lead residue of zinc distillation. Describes the results of investigation of this alloy].—Amr. Jnl. of Sci. April 1916; p 351; pp 4; 60c.

Whithead, W. L.—*The Paragenesis of Certain Sulphide Intergrowths.* [Micro photographs are given and the principal sulphides considered are of copper, though lead and zinc are taken up also]. —Econ. Geol. Jan. 1916; p 1; pp 13*; 60c.

——— *Italian Mineral Industry.* [Gives the production, prices, etc., prevailing in the several mineral industries of the country, principal of which are sulphur, zinc, iron ore, mercury and other less important minerals].—Mg. Jnl. April 29 1916; p 286; pp 2; 35c.

——— *The Base Metal Industry.* [Discusses the subject with regard to British and German interests with particular reference to Australia].—Jnl. Chamber of Mines West Aust. Dec. 31 1915; p 281; pp 3½; 50c.

——— *Zinc Ores, Their Occurrence and Utilization.* [Descriptions of the deposits in various countries are given briefly. Prices of the ore and methods of computing its value are given, as well as costs of smelting and methods for the same].—Bull. Imperial Inst., London; p 44; pp 37; 75c.

Production

Bell, R. N.—*Mining in Idaho.* [Reviews operations of the principal mines and smelters in the state].—E. & M. J. Jan. 22 1916; p 177; pp 3; 25c.

Bell, Robert N.—*Seventeenth Annual Report of the Mining Industry in Idaho for the Year* 1915. [Is a review of the usual kind made annually by the state mine inspector].—Boise, Idaho, Bur. of Mines; pp 134*.

Denis, T. C.—*Mining in the Province of Quebec During* 1915. [Gives general information and production of asbestos, chrome, sulphur, copper, zinc, lead, magensite and other less important minerals]. —Canadian Mg. Inst. Bull. Jan. 1916; p 12; pp 3½; 35c .

Hill, J. M.—*Gold, Silver, Copper, Lead and Zinc in the Eastern States in* 1915. [The industry and production is reviewed separately for the entire group of states by metals and is later reviewed by states and counties].—Min. Res. of U. S. I:2; pp 14.

Howard, L. O.—*Mining in Utah.* [A review of the present day situation in the zinc industry principally].—M. & S. P. Jan. 22 1916; p 132*; pp 1½*; 20c.

Ingalls, W. R.—*Spelter Statistics for* 1915. [Includes 1915 and 4 years previous].—E. & M. J. April 1 1916; p 606; pp 6; 25c.

Jacobs, E.—*Mining in British Columbia in* 1915. [Gold, silver, copper, lead, zinc and other less important minerals are reviewed].—Canadian Mg. Jnl. Feb. 1 1916; p 70; pp 2½; 35c.

Jacobs, E.—*The Slocan District, British Columbia in* 1916. [Speaks of the different properties in the district and their production of silver, lead and zinc]. —Canadian Mg. Jnl. Feb. 15 1916; p 98; pp 2¼; 35c.

Jacobs, E.—*The Slocan District, British Columbia in* 1915. [A general review of operations in the district].—Canadian Mg. Jnl. Mar. 1 1916; p 119; pp 2; 35c.

McCaskey, H. D.—*Mineral Production of the United States in* 1914. [The subject is taken up separately by the minerals and collectively by production of the U. S.].—Min. Res. of U. S. I:A; pp 69.

McLeish, John.—*Annual Report on the Mineral Production of Canada,* 1914. [Each mineral is reported on separately. The imports, exports, production and condition of the trade are given].—Canada Dept. of Mines, Mines Branch, No. 384; pp 362.

McLeish, John.—*Preliminary Report of the Mineral Production of Canada in* 1915. [The principal minerals are lead, zinc, copper, silver, gold, nickel, asbestos, coal and iron].—Canada Dept. of Mines, Mines Branch Report 408; pp 28. Mg. World April 22 1916; p 781; pp 1½; 10c.

Moulden, J. C.—*Zinc, Its Production and Industrial Applications.* [The different kinds of zinc are taken up and their uses reviewed. A separate table is given showing the many alloys and their proportions and followed by an account of zinc production for 1913 to 1845].—Jnl. of Royal Soc. of Arts June 2 1916; p 517; pp 15*; 35c.

Muth, E. G.—*Great Increase in Spelter*

Production. [Reviews the general situation during 1915 and compares it with other nearby years].—Zinc & Lead Jnl. June 1916; p 5; pp 2½*; 20c.

Siebenthal, C. E.—*Lead and Zinc Resources of the United States.* [A paper read before the Pan-American Scientific Cong. on the production of the metals in general].—Mg. World Feb. 12 1916; p 355; pp 2¾; 10c.

Siebenthal, C. E.—*The Production of Spelter in the U. S. in* 1915. [Abst. from a final report of the U. S. G. S.].—Mg. World April 22 1916; p 785; pp 1½; 10c.

Siebenthal, C. E.—*Zinc and Cadmium in* 1914. [The production is taken up by countries for the world].—Min. Res. of U. S. I:24; pp 56.

Verne, C. E.—*Zinc's Record Breaking Production.* [A review of the production and prices for several years in the Joplin district].—Zinc & Lead Jnl. June 1916; p 3; pp 2*; 20c.

Wittich, L. L.—*Joplin News-Herald's Zinc and Lead Handbook,* 1916. [Tables giving the zinc and lead production of the world and U. S. production of ores in the Joplin and surrounding districts is also given].—Joplin News-Herald; book; pp 90*; 25c.

Zalinski, E. R.—*Mining in Utah in* 1915. [Details on production and activities in gold, silver, zinc, copper and smelting industries.—E. & M. J. Jan. 15 1916; p 138; pp 2½; 25c.

——— *Italian Mineral Industry* [Gives the production, prices, etc., prevailing in the several mineral industries of the country, principal of which are sulphur, zinc, iron ore, mercury and other less important minerals].—Mg. Jnl. April 29 1916; p 286; pp 2; 35c.

——— *Lead and Zinc Industry in the United States.* [1915 and some of the previous years].—Mg. World Feb. 5 1916; p 254; pp 7*; 10c.

——— *L'Industria Minerale Italiana nel* 1914. [Treats on the mineral industry and production in general for Italy during 1914].—Revista Sci. Jan. 25 1916; p 19; pp 2; 35c.

——— *Metal Output of the Central States.* [With some discussion the values and quantity of lead, zinc, silver and copper produced are given].—M. & S. P. June 3 1916; p 821; pp 1; 20c.

——— *Mineral and Metal Production in the United States in* 1915. [A ge review].—Mg. World Feb. 5 1916; p pp 2; 10c.

——— *Missouri's Mine Output in* (Abst. of an advance report of th S. G. S. Production figures are g and a review of the mine and sm conditions and operations is made].— World June 17 1916; p 1128; pp ¾;

——— *Production of American M Reaches Highest Point in* 1915. [Co iron and zinc show the largest gain Mg. Cong. Jnl. Jan. 1916; p 9; pp 2;

——— *Prosperous Year for Mines the U. S.* [Abst. from the mid-year port of the U. S. G. S. on the pro tion of copper, iron, zinc, silver gold].—Mg. World Jan. 1 1916; p 51 1½; 10c.

——— *The Metals.* [A review of general conditions and production in lead and spelter industries of the wo —Mg. Jnl. Feb. 5 1916; p 82; pp 3;

——— *The Occurrence and Uti tion of Zinc Ores.* [Takes up the sou from which zinc is obtained and disc es the production of the same].—I Imperial Inst. Dec. 1915; p 611; pp 2 75c.

——— *Zinc Ores, Their Occurr and Utilization.* [Descriptions of the posits in various countries are g briefly. Prices of the ore and met of computing its value are given, as as costs of smelting and methods for same].—Bull. Imperial Inst., London 44; pp 37; 75c.

——— *Zinc in* 1915. [Wisconsin, lin, Siberia and U. S. in general are sidered, giving prices which prevailed production. The spelter market is viewed in considerable detail by qua year periods].—E. & M. J. Jan. 8 1 p 61; pp 5½; 25c.

CADMIUM.

Regg, Gilbert.—*Zinc-Dust Precipitc Tests.* [A discussion on the solubilit cadmium, zinc and lead with each c while in the molten state and thus fc in zinc dust used for precipitation f cyanide solutions].—Mg. World Jan 1916; p 122; pp 1; 10c.

Siebenthal, C. E.—*Zinc and Cadm in 1914.* [The production is taken u countries for the world].—Min. Res U. S. 1:24; pp 56.

CHAPTER V.

IRON AND STEEL.

Iron Ores and Mining

Allen, R. C.; Barrett, L. P.—*Contributions to the Pre-Cambrian Geology of Northern Michigan and Wisconsin.* [This section is of little real importance to economic mining].—Mich. Geol. Surv. Pub. 18; Geol. Ser. 15; pp 164*.

Armstrong, F. H.—*An Electro-Hydraulic Shovel.* [In operation in the iron mines of northern Michigan and operated by electric power with certain hydraulic features. It is similar to the steam shovel in common use there].—A. I. M. E. Bull. Feb. 1916; p 203; pp 7*; 35c. I. Tr. Rev. Feb. 17 1916; p 393; pp 2½*; 25c.

Bailly, M. L.—*The Development of the French Coal, Iron and Steel Industries.* [Abst. from L'Information. The development of a syndicate, a new iron-ore region, the profits and sales of coal and coke and other items of financial interest are brought out].—I. & C. Tr. Rev. May 12 1916; p 548· pp 1; 35c.

Berg, G.—*Das Magneteisenerzvorkommen von Kittilä in Finnisch-Lappmarken.* [The geology and genesis of the magnetite deposits in Finnish-Lapland].—Glückauf Jan. 15 1916; p 45; pp 5*; 50c.

Brinsmade, R. B.—*The Contact Mines of Vera Cruz.* [The geology of the formation is taken up with a general description of the country. Descriptions of different types of ore-bodies are then given and some information on historic operation of the mines].—Mex. Mg. Jnl. April 1916; p 119; pp 3*; 35c.

Campbell, H. H.—*The Steel Industry of Great Britain.* [Treats on the importation of iron ores and production of steel. The larger steel centers are taken up separately].—Iron Age May 4 1916; p 1057; pp 2; 30c.

Coleman, F. C.—*Ferro-Concrete Bunkers at the Brymbo Steel Works, Wrexham, England.* [Line drawings of the bins for receiving the lime and iron ore from the trains are given].—Coll'y Guard. May 5 1916; p 845; pp 1½*; 35c.

Doelter, C.—*Die Mineralschätze der Türkei.* [Gives separate briefs on the mineral resources of Turkey, including chromium, iron, gold, antimony, silver, lead, mercury and copper].—Montanist. Rund. April 16 1916; p 217; pp 4; 35c.

Eckel, E. E.—*Iron Ores: Their Occurrence, Valuation and Control.* [Does not discuss the ores from a geological view only but speaks also of the relation they bear to the industry].—McGraw-Hill; pp 430*; $4.

Estep, H. Code.—*Iron Mining on the Menominee Range, Michigan.* [Brings out history of the Porter lands and describes the geology, nature of the deposits and origin].—I. Tr. Rev. Jan. 20 1916; p 179; pp 6*; 25c.

Estep, H. Cole.—*Iron Range Developments in 1915.* [A review of operations in northern Michigan, Minnesota and Wisconsin, with a brief on the war's effects on labor].—I. Tr. Rev. Jan. 6 1916; p 81; pp 13½*; 60c.

Hopkins, P. E.—*Kowkash Gold Area, Ontario.* [A general and geological description of the district in western Ontario where gold is the mineral which caused a rush to the district. Iron formation is also present].—Ont. Bur. of Mines; Bull. 27; pp 15*.

Hotchkiss, W. O.; Bean, E. F.; Wheelwright, O. W.—*Mineral Land Classification, Wisconsin.* [A geological reconnoissance of an area of pre-Cambrian rocks which are supposed to carry deposits of iron].—Wis. Geol. & Nat. Hist. Surv. Bull. 64; pp 378*.

Kellogg, L. O.—*Stripping the Overburden in Openpit Mining.* [A general review of the subject, taking copper and iron deposits into consideration mostly].—Engg. Mag. Mar. 1916; p 896; pp 14*; 35c.

Kind, R.—*Die Entwicklung und Bedeutung der Eisenindustrie Belgiens.* [A review of the iron industry in Belgium].—Montanist. Rund. April 16 1916; p 227; pp 2; 35c.

Krusch, P.—*Die Erz- und Phosphatlagerstätten Belgiens.* [On the ore and phosphate deposits of Belgium, including lead, zinc, iron, coal and manganese].—Glückauf Mar. 4 1916; p 185; pp 5*; Mar. 11; p 210; pp 9*; $1.

Leith, C. K.—*Conservation of Iron Ore.* [Points out the places where our ore deposits are being wasted, such as incomplete methods of mining and later refining].—A. I. M. E. Bull. Feb. 1916; p 227; pp 5; 35c.

Marstrander, R.—*The Mineral Resources of Uruguay, South America.* [The country has been exploited but little. Iron-manganese ore is of greatest importance, though gold and copper are found and there is possibility for lead,

silver, coal and petroleum].—Mg. Mag. June 1916; p 315; pp 6*; 50c.

McCarty, E. P.—*Hydraulic Stripping on the Cuyuna Range, Minnesota.* [A paper read before the L. S. M. I., giving details of construction and operation of hydraulic giants. Centrifugal and sand pumps were used and 1,500,000 cu. yds. were moved at a cost of 6.7 cts. per yard].—I. Tr. Rev. Jan. 13 1916; p 135; pp 5*; 25c.

McConnell, R. G.—*Texada Island, British Columbia.* [Complete description of geology of formation and economic geology. Copper is the principal mineral and iron, gold, lime, and clay are produced in lesser quantities].—Canada Dept. of Mines; Memoir 58; pp 111*.

Miller, B. L.; Singewald, J. T.—*Mining Industry in Brazil.* [Principally gold, manganese, monazite sands and gems though deposits of iron not being worked are there. Speaks of the government railroad].—E. & M. J. April 29, 1916; p 759; pp 3¾*; 25c.

O'Harra, B. M.—*Black Hills Gold-Bearing Iron-Quartz-Tremolite Belt, South Dakota.* [Abst. from a thesis at the South Dakota School of Mines].—E. & M. J. April 29 1916; p 770; pp 3¼*; 25c.

Paul, H. W.—*Mining in Japan in* 1915. [Production and discussion are given on manganese, pyrite, sulphur, gold, silver, copper, coal and iron].—E. & M. J. Jan. 15 1916; p 133; pp 1½; 25c.

Pratt, W. E.—*The Iron Ores of the Philippine Islands.* [The ores were discovered in 1664 and are of the several different varieties. History, genesis of the deposits and geology of the surrounding formation are all taken up in some detail].—A. I. M. E. Bull. Feb. 1916; p 247; pp 16*; 35c.

Preston, T. H.—*The Urals and Their Mineral Wealth.* [Steel, copper, platinum, osmiridum and miscellaneous other minerals are reviewed as regards their industry and production].—Mg. Mag. April 1916; p 197; pp 5; 50c.

Raefler, F.—*Die Brauneisenerzlagerstätten Oberschlesiens.* [Analyses, geology, mode of occurrence and production statistics are given for the iron fields of upper Silesia, Europe. The ore is hematite and limonite].—Berg & Hütt. Rund. Dec. 5 1915; p 11; pp 7; 35c.

Savage, T. E.; Ross, C. S.—*The Age of Iron Ore in Eastern Wisconsin.* [Oolitic ores occur in the southeastern part].—American Jnl. of Sci. Feb. 1916; p 187; pp 6½*; 60c.

Sawhill, R. V.—1915 *Lake Superior Ore Shipments.* [Is confined to iron ore. Fi ures show the production by properti and these are segregated according to t range on which they are located].—I. T Rev. Mar. 16 1916; p 602; pp 4*; 25c.

Singewald, J. T.; Miller, B. L.—*T Genesis and Relations of the Daiqu and Firmeza Iron-Ore Deposits, Cu* [The deposits are of commercial val and have been worked since 1884].—Bt A. I. M. E. Mar. 1916; p 671; pp 8; 3

VanBrunt, Bradlee.—*A New Meth of Stripping Iron Ore on the Mes Range, Minnesota.* [A new installati of the largest steam shovel capable making a floor 128 ft. across and 61 deep from one position].—Mg. Wo Jan. 15 1916; p 117; pp 1¾*; 10c.

White, E. E.—*Analysis of Slate a Dike.* [These formations are hard distinguish by their physical charact on the iron ranges of Michigan and me ods for chemical analysis are here give —E. & M. J. Mar. 4 1916; p 433; pp 25c.

Williams, M. Y.—*Arisaig-Antigon District, Nova Scotia.* [A complete g logical review of the district where c per, iron, oil-shale, gypsum and limest are the principal economic deposits] Canada Geol. Surv. Memoir 60; pp 1

Ysassi, Victor.—*The Iron Mines of Sierra Menera District, Spain.* [A scription of their ore deposits and tra porting facilities].—A. I. M. E. Bull. F 1916; p 237; pp 6*; 35c.

——— *Aus dem Jahrsbericht des V eins für die Gergbaulichen Interessen Oberbergamtsbezirk Dortmund für Jahr* 1913. [From the state report on operation and production of the iron coal mines in Germany in 1913].— Oberschles. Berg & Hütten-Vereins J 1914; p 290; pp 20; 50c.

———*Bericht des Vortandes des Ol schlesischen Berg-und Hüttenmännisc Vereins über die Wirksamkeit des Ver im Jahre* 1913-14. [A state report on operation and production of the mines smelters of upper Silesia, which is mo iron and coal land].—Zts. Oberscles. E & Hütten-Vereins July 1914; p 281; p 50c.

——— *Brazil Has Immense Bodies Iron Ore.* [Reviews the subject from point of ore reserves and tells the l tion of ore bodies and available tr portation].—Mg. World Jan. 15 1916 123; pp 1½*; 10c.

——— *Electric Power in South Mines.* [Deals with hydroelectric inst ations at the iron mines surrounding

mingham, Ala.].—I. Tr. Rev. June 29 1916; p 1413; pp 2*; 25c.

——— *Industrie Electrometallurgiche.* [General review of operations in Europe, with tables of operations].—Met. (Italian) Nov. 30 1915; p 704; pp 5*; $1.

——— *Summary Report of the Geological Survey, Department of Mines, Canada,* 1915. [In one volume separate reports made during the year on different districts and topics are given].—Canadian Geol. Surv. Sessional Paper 26; pp 307*.

——— *Stripping the Hillcrest Mine with a Sand Pump in Minnesota.* [Centrifugal sand and water pumps were used with electric power. The area stripped was 1000 by 200 ft. and 65 ft. deep].—E. & M. J. Jan. 29 1916; p 211; pp 4¼*; 25c.

——— *Stripping Mesabi Deposits, Minn.* [A method employing a large steam shovel which from one position can make a floor 128 ft. across at a depth of 61 ft.].—Iron Age Jan. 13 1916; p 145; pp 1*; 30c.

——— *The Rowe Mine Ore-Washing Plant, Minnesota.* [A detailed description, including the handling of the ore with belt conveyors].—Mg. World Mar. 11 1916; p 517; pp 2¼*; 10c.

Beneficiation of Ores

Barr, J. C.—*Chain Grizzly at the Rowe Mine, Minnesota.* [A grizzly made of chains and used where the train of cars dump into the pocket].—E. & M. J. April 1 1916; p 599; pp 1½*; 25c.

Lyons, D. A.; Keeney, R. M.—*Feasibility of Western Electro-Metallurgy.* [Deals with iron, aluminum, zinc, copper, costs and other items of importance].—Jnl. of Elect. Power & Gas Mar. 25 1916; p 237; pp 3¾*; April 8; p 282; pp 3; April 15; p 296; pp 2½; April 22 1916; p 316; pp 2¼; 70c.

Singewald, J. T., Jr.; Miller, B. L.—*Mining in Oriente Province, Cuba.* [A general description of the country and geology is given. Copper and iron mines are operated. Open-pit methods and flotation treatment of ores are used].—E. & M. J. April 1, 1916; p 587; pp 6*; 25c.

Storey, O. W.—*Review of Recent Progress in Electrolytic Iron.* [Reviews the results of investigation along this line which may eventually offer a method of working the low grade deposits now known].—American Electrochem. Soc. Bull.; p 169; pp 11; 35c. Met. & Chem. Engg. May 1 1916; p 534; pp 3; 30c.

Furnaces and Accessories

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Coleman, F. C.—*Ferro-Concrete Bunkers at the Brymbo Steel Works, Wrekham, England.* [Line drawings of the bins for receiving the lime and iron ore from the trains are given].—Coll'y Guard. May 5 1916; p 845; pp 1½*; 35c.

Cook, H. E.—*Metallography of Steel for United States Naval Ordnance.*—A. I. M. E. Bull. Feb. 1916; p 375; pp 26; 35c. I. Tr. Rev. Feb. 17 1916; p 379; pp 10*; 25c.

Cotter, Arundel.—*The Authentic History of the United States Steel Corporation.* [Besides the growth and details regarding it, many items of financial interest are given].—Moody Mag. & Book Co. N. Y.; book; pp 231*.

Guy, Albert E.—*Pumping Installations in the Leadville, Colo., District.* [Details of tests and methods of operation for pumping in the district. Direct connected, multi-stage and other types are used]. Mg. World Jan. 22 1916; p 159; pp 3½*; 10c.

Haigh, B. P.—*The Endurance of Metals Under Alternating Stresses.* [A paper read before the West of Scotland Iron and Steel Inst].—I. & C. Tr. Rev. Mar. 17 1916; p 298; pp 1⅛*; 35c.

Stark, C. J.—*The Renaissance of Eastern Ore Market.* [Takes up the situation of iron ore product which was being stocked in our eastern states and then readily consumed and a shortage in the product discovered].—I. Tr. Rev. Mar. 16 1916; p 585; pp 5*; 25c.

Thompson, F. C.—*Surface Tension Effects in the Intercrystalline Cement in Metals and the Elastic Limit.* [A paper read before the Iron & Steel Inst].—I. & C. Tr. Rev. May 5 1916; p 515; pp 1*; 35c.

Upton, G. B.—*The Structure and Properties of Materials of Construction.* [A book taking up theory and tests pertaining to the properties and uses of various construction materials].—Wiley & Son; book; pp 325*; $2.50.

Yensen, T. D.—*Magnetic and Other Properties of Iron-Silicon Alloys, Melted in Vacuo.* [The alloys are of particular use in electrical work. The investigations are to determine their conductivity and metallographic structure].—Univ. of Ill. Bull. XIII; No. 12; pp 67.

——— *Iron and Steel Prices for Eighteen Years.* [Contains curves and tables].—Iron Age Jan. 6 1916; p 14; pp 4*; 60c.

CHAPTER VI.

ALLOYS, ANTIMONY, MANGANESE, MOLYBDENUM, TUNGSTEN, ETC.

ALLOYS

Barnitz, H. L.—*The Technical Production of Hydrogen and Its Industrial Application.* [Reprint from Met. & Chem. Engg. It is used to make the oxy-hydrogen flame for welding. Several different processes are described in general and some details given].—Barnitz, New York; pp 11; 30c.

Biddle, C. M., Jr.—*Monel Metal.* [This is a natural alloy containing about 70% nickel and 30% copper].—Steam Feb. 1916; p 37; pp 1½; 35c.

Browne, De Courcy.—*Metals and Alloys in the Steel Industry.* [Includes ferro-silicon, ferromanganese, ferrochrome, tungsten ferrotitanium, etc.].—Iron Age Jan. 6 1916; p 23; pp 1½; 60c.

Buck, D. M.; Handy, J. O.—*Research on the Corrosion Resistance of Copper Steel.* [A number of tests showing that copper alloyed with steel makes the metal more resistive to weather, etc.].—Jnl. Ind. & Eng. Chem. Mar. 1916; p 209; pp 8*; 60c.

Cain, J. R.; Schramm, E.; Cleaves, H. E.—*Preparation of Pure Iron and Iron-Carbon Alloys.* [Discusses method of making source of contamination of other minerals and methods of chemical analysis].—U. S. Bur. of Stand. Sci. Paper 266; pp 25*.

Fahrenwald, F. A.—*A Development of Practical Substitutes for Platinum and Its Alloys, with Special Reference to the Alloys of Molybdenum and Tungsten.* [Details are given regarding the making of the alloys and their properties, including a metallographic description].—A. I. M. E. Bull. Jan. 1916; p 103; pp 47*; 35c.

Grosvenor, W. H.—*The New Place of Magnesium in Industry.* [A paper read before the American Electrochemical Soc. Its uses in alloys and as a scavenger in steel, with costs of making, production and some of its properties are given].—Iron Age Feb. 17 1916; p 434; pp 2; 30c.

Jones, J. L.—*Use of Wrought Manganese Bronze.* [A paper read before the American Inst. of Metals. This alloy resists corrosion and has a low melting point].—I. Tr. Rev. Jan. 27 1916; p 233; pp 2; 25c.

Karr, C. P.; Rawdon, H. S.—*Standard Test Specimens of Zinc Bronze.* [The first part is on the testing for mechanical properties and the second on the micr structure of the alloy].—U. S. Bur. Stand. Tech. Paper 59; pp 67*.

Lyon, D. A.; Keeney, R. M.—*Feasibi ity of Western Electro-Metallurgy.* [Dea with iron, aluminum, zinc, copper, cos and other items of importance].—Jnl. Elect. Power & Gas Mar. 25 1916; 237; pp 3/34*; April 8; p 282; pp 3; Apr 15; p 296; pp 2½; $1.05.

Mason, F. H.—*Monel Metal.* [Beside discussing this nickel-copper alloy cor siderable is given regarding its sourc which is the nickel field at Sudbur Ont.].—M. & S. P. April 22 1916; p 585 pp 2*; 20c.

Matheuson, C. H.; Philips, A.—*Re crystallization of Gold-Worked Alph Brass on Annealing.* [Gives a metal lographic description of the effects of an nealing on the structure and propertie of the alloy].—A. I. M. E. Bull. Jan. 1916 p 1; pp 50*; 35c.

Moulden, J. C.—*Zinc, Its Productio and Industrial Application.* [The differ ent kinds of zinc are taken up and thei uses reviewed. A separate table is give showing the many alloys and their pro portions and followed by an account o zinc production for 1913 to 1845].—Jnl of Royal Soc. of Arts June 2 1916; 517; pp 15*; 35c.

Rawdon, H. S. — *Microstructura Changes Accompanying the Annealing o Cast Bronze.* [Micrographic illustration are given, accompanied with a descrip tion of the topic].—U. S. Bur. Stand Tech. Paper 60; pp 17*.

Read, A. A.—*Some Tin-Aluminum-Copper Alloys.* [A paper read before the British Inst. of Metals. Various diagrams and tables of information are given showing composition and other characters].—Engg. April 7 1916; p 335; pp 1⅞*; 35c.

Rose, T. K.—*The Metallurgy of Gold.* Separate chapters take up subjects related to gold as: methods of extraction, concentration, alloys, chemistry, placer deposits, crushing, geology, assaying, etc. Reasons for rather than a bare explanation is the policy].—J. B. Lippincott Co.; pp 610*; book; $6.50.

Sebast, F. M.; Gray, G. L.—*The Electrical Resistances and Temperature Coefficients of Nickel-Copper-Chromium and Nickel-Copper-Manganese Alloys.* [Gives the results of laboratory tests].—Ameri-

can Electrochem. Soc. Bull. p 203; pp 10*; 35c.

Taggart, A. F.; Young, R. W.—*Grinding Brass Ashes in the Conical Ball Mill.* [In working this alloy ashes consist of slag, sweepings, overflow from the molds, etc. Tests are described on grinding the ashes previous to concentrating on tables]. A. I. M. E. Bull. Feb. 1916; p 435; pp 8*; 35c. I. Tr. Rev. Feb. 24 1916; p 440; pp 3*; 25c.

Tone, F. J.—*Electric Furnace Development at Niagara Falls.* [A paper presented at the American Electrochemical Soc. relating to the electric power from the Falls to the metallurgy of iron alloys and other more rare metals].—Mg. World May 13 1916; p 907; pp 2¾; 10c.

Uhler, H. S.; Browning.—*On a Gallium-Indium Alloy.* [The alloy was discovered as globules in the lead residue of zinc distillation. Describes the results of investigation of this alloy].—Amr. Jnl. of Sci. April 1916; p 351; pp 4; 60c.

Upton, G. B.—*The Structure and Properties of Materials of Construction.* [A book taking up theory and tests pertaining to the properties and uses of various construction materials].—Wiley & Son; book; pp 325*; $2.50.

Yensen, T. D.—*Magnetic and Other Properties of Iron-Silicon Alloys, Melted in Vacuo.* [The alloys are of particular use in electrical work. The investigations are to determine their conductivity and metallographic structure].—Univ. of Ill. Bull. XIII; No. 12; pp 67*.

Yensen, T. D.—*Vacuum-Fused Iron with Special Reference to Effect of Silicon.* [The iron-silicon alloy is of particular use in electricity. Results of investigations herein are on the electrical and mechanical properties and metallographic changes produced].—A. I. M. E. Bull. Feb. 1916; p 483; pp 30*; 35c.

——— *Invar and Related Nickel Steels.* [A compilation of figures and other information on the properties of various nickel-steel alloys and especially Invar].—U. S. Bur. of Stand.; Circular 58; pp 68*.

——— *Niagara Falls Power and American Industries.* [A synopsis of papers read before the American Electrochemical Soc. Steel alloys and the alloying metals are taken up].—Met. & Chem. Engg. May 1 1916; p 507; pp 6¼; 30c.

ANTIMONY

Betts, A. G.—*Electrolytic Antimony Refining.* [A paper read before the American Electrochemical Soc. on the electrolysis of antimony].—Chem. Eng. Mar. 1916; p 117; pp 4¾*; 35c.

Brainard, R. L.—*Antimony Mining in Coeur d'Alene District, Idaho.* [A general review of operations and occurrence of the ores].—Mg. World Feb. 12 1916; p 351; pp 2½*; 10c.

Brooks, A. H.—*Mining in Alaska in* 1915. [Reprint of an advance report of the U. S. G. S. on the production and operations of the district in which the principal minerals are copper, gold, silver, antimony, tin and other unimportant ones].—M. & S. P. Jan. 8 1916; p 51; pp 6*; 20c.

Cole, F. L.—*Antimony in China.* [A decription of the history of the industry, the nature and occurrence of the ores and methods of smelting the product].—M. & S. P. Mar. 11 1916; p 369; pp 5*; 20c.

Doelter, C.—*Die Mineralschätze der Türkei.* [Gives separate briefs on the mineral resources of Turkey, including chromium, iron, gold, antimony, silver, lead, mercury and copper].—Montanist. Rund. April 16 1916 p 217; pp 4; 35c.

Hall, W. T.—*The Determination of Antimony in the Products Obtained by Roasting Stibnite.* [Roasting antimony sulphide will produce a trisulphide, trioxide, tetroxide and some unoxidized antimony. The article gives a method for analysis of this combination].—A. I. M. E. Bull. Jan. 1916; p 99; pp 3*; 35c.

Hofman, H. O.—*The Behavior of Stibnite in an Oxidizing Roast.* [Gives the results of experimental work on the roasting of stibnite (antimony sulphide)].—A. I. M. E. Bull. Jan. 1916; p 91; pp 97*; 35c.

Krusch, D. P.—*Die Nutzbaren Lagerstätten Serbiens und Ihre Wirtschaftliche Bedeutung für die Zentralmächte.* [On the economic mineral deposits of Serbia].—Metall & Erz Feb. 22 1916; p 69; pp 9*; 35c.

Mallery, Willard.—*Antimony Veins at Bernice, Nevada.* [Describes the geologic formation and nature of the deposits].—M. & S. P. April 15 1916; p 556; pp 1; 20c.

Peters, Franz.—*Forschungen und Fortschritte auf dem Gebeit der Elektrometallurgie des Aluminiums* 1906-1915. [Research and practice on the electrometallurgy of aluminum].—Glückauf Jan. 22 1916; pp 5½; 50c.

Stansfield, A.—*Electric Furnaces as Applied to Non-Ferrous Metallurgy.* [A paper read before the Institute of Metals and bearing on zinc, copper, nickel, lead,

antimony, etc.].—Mg. Jnl. April 29 1916; p 291; pp 1½; 35c.

Wheler, A. S.—*Antimony Production in Hunan Province, South China.* [Describes the deposits; the method of mining and smelting the ore and gives figures on the production].—Bull. Inst. of Mg. & Met., London, No. 137; pp 14*; 50c. Mg. World April 8 1916; p 697; pp 2¾; April 15 1916; p 739; pp 2½*; 20c. E. & M. J. April 8; p 637; pp 4¼*; 25c.

Wheler, A. S.—*Metalliferous Mines of Hunan.* [Abst. from the Far Eastern Review. A general description of the deposits and operations. They are principally antimony, some mercury and gold].—M. & S. P. Mar. 4 1916; p 337; pp 5*; 20c.

——— *Production of Antimony Ores in* 1915.—Mg. World Feb. 5 1916; p 280; pp ¾; 10c.

——— *Summary Report of the Geological Survey, Department of Mines, Canada,* 1915. [In one volume separate reports made during the year on different districts and topics are given].—Canadian Geol. Surv. Sessional Paper 26; pp 307*.

BISMUTH

Means, A. H.—*New Mineral Occurrences from the Tintic District, Utah.* [Six new minerals of lead, zinc and bismuth are described and a geochemical treatise is given on their origin].—Amer. Jnl. of Sci. Jan. 1916; p 125; pp 6; $1.10.

Singewald, J. T., Jr.; Miller, B. L.—*The Mining Industry of Peru.* [Besides talking of the metals mined the question of labor, law and transportation are spoken of].—E. & M. J. May 13 1916; p 845; pp 5½*; 25c.

——— *Queensland Mining Industry.* [A review of 1915 made by the Under-Secretary for Mines. The condition of all things related to this department are taken up, including the production and condition of the several metal mining industries].—Queen. Govt. Mg. Jnl. Mar. 15 1916; p 101; pp 17; 35c.

CHROMIUM

Balz, G. A.—*Why Refractories Are a World Necessity.* [A general talk on elements which go to make up the refractory product such as silica, magnesite, bauxite, chromite, graphite and other materials of less importance].—B. & C. Rec. April 18 1916; p 739; pp 3½; 35c.

Brown, G. C.—*Mines and Mineral Resources of Shasta, Siskiyou and Trini Counties, Cal.* [Copper, gold, silver, bric lime, chrome, pyrite, coal, mercury, et are produced].—Cal. State Mg. Bur.; 1 192*.

Denis, T. C.—*Mining in the Provin of Quebec During* 1915. [Gives gener information and production of asbesto chrome, sulphur, copper, zinc, lead, ma nesite and other less important minerals —Canadian Mg. Inst. Bull. Jan. 1916; 12; pp 3½; 35c.

Doelter, C.—*Die Mineralschätze d Türkei.* [Gives separate briefs on t mineral resources of Turkey, includin chromium, iron, gold, antimony, silve lead, mercury and copper].—Montanist Rund. April 16 1916; p 217; pp 4; 35c.

Edwards, C. A.—*Initial Temperatur and Critical Cooling Velocities of Chromium Steel.* [A paper read befo the Iron & Steel Inst. Curves showin the results of the investigations a given].—I. & C. Tr. Rev. May 5 191 p 513; pp 1*; May 19 1916; p 465; pp 1 70c.

Hadfield, Robert.—*The Corrosion o High Chromium Steel.* [Gives the r sults of tests made by the author].—Iro Age Jan. 20 1916; p 202; pp 2; 30c.

Hall, Edgar.—*Chrome-Iron Ore as Lin ing for Reverberatory Furnaces.* [Th method was tried with success in the ma furnaces of an Australian mine].—E. M. J. Feb. 5 1916; p 267; pp 1¾; 25c.

Sebast, F. M.; Gray, G. L.—*The Elec trical Resistances and Temperature Co efficients of Nickel-Copper-Chromium an Nickel-Copper-Manganese Alloys.* [Give the results of laboratory tests].—Ameri can Electrochem. Soc. Bull p. 203; p 10*; 35c.

——— *Niagara Falls Power an American Industries.* [A synopsis o papers read before the American Electro chemical Soc. Steel alloys and the alloy ing metals are taken up].—Met. & Chem Engg. May 1 1916: p 507; pp 6¼; 30c.

MANGANESE

Bondolfi, Fausto.—*Un Capitolo di Sider urgia Applicata.* [A chapter on the ap plication of Metallurgy and metallography to iron and steel].—La Met. Italiana Mar 31 1916; p 165; pp 37*; $1.

Dewey, H.; Bromehead, C. E. N.; Car ruthers, R. G.—*Special Reports on th Mineral Resources of England.* [Vol. is on tungsten and manganese ores an Vol. II on the minerals barytes and with erite].—Geol. Surv. of England, London book; 50c.

Hadfield, R.; Friend, J. N.—*The Corrosion of Iron and Steel.* [A paper read before the Iron & Steel Inst. Experimental work is brought out as regards the effects of manganese and carbon on the corrosion of steel].—Engg. May 12 1916; p 445; pp 3*; 35c.

Harder, E. C.—*Manganese Ores of Russia, India, Brazil and Chile.* [A paper published by permission of the U. S. G. S. Director. Gives the production, condition of the markets, distribution of ores and nature of the same].—Bull. A. I. M. E. May 1916; p 761; pp 38*; 35c.

Hewett, D. F.—*Some Manganese Mines in Virginia and Maryland.* [Most of the important mines are described separately. Four types of deposits are described as regards their geology and genesis].—U. S. G. S. Bull. 640-C; pp 35*.

Jones, J. L.—*Use of Wrought Manganese Bronze.* [A paper read before the American Inst. of Metals. This alloy resists corrosion and has a low melting point].—I. Tr. Rev. Jan. 27 1916; p 233; pp 2; 25c.

Johnson, J. E., Jr.—*Burdening the Blast Furnace.* [On the control of various constituents in the charge in regard to the amount which will give good furnace operations and the kind of iron desired].—Met. & Chem. Engg. April 15 1916; p 443; pp 7¾; 30c.

Koepping, E. D.—*The Electrolytic Determination of Copper in Copper-Manganese.* [Details for the method of procedure are given for the analysis of copper in the presence of large quantities of manganese].—Met. & Chem. Engg. April 15 1916; p 441; pp 1¼; 30c.

Krusch, P.—*Die Erz- und Phosphatlagerstätten Belgiens.* [On the ore and phosphate deposits of Belgium, including lead, zinc, iron, coal and manganese].—Glückauf Mar. 4 1916; p 185; pp 5*; Mar. 11; p 210; pp 9*; $1.

Krusch, D. P.—*Die Nutzbaren Lagerstätten Serbiens und Ihre Wirtschaftliche Bedeutung für die Zentralmächte.* [On the economic mineral deposits of Serbia].—Metall & Erz Feb. 22 1916; p 69; pp 9*; 35c.

Mann, R. L.—*Owl Head Manganese Deposit, San Bernardino County, California.* [A description of the deposits, with a geological description of the formation and genesis of the ores].—Mg. World April 15 1916; p 743; pp 1¼*; 10c.

Marstrander, R.—*The Mineral Resources of Uruguay, South America.* [The country has been exploited but little. Iron-manganese ore is of greatest importance, though gold and copper are found and there is possibility for lead, silver, coal and petroleum].—Mg. Mag. June 1916; p 315; pp 6*; 50c.

Miller, B. L.; Singewald, J. T.—*Mining Industry in Brazil.* [Principally gold, manganese, monazite sands and gems, though deposits of iron not being worked are there. Speaks of the government railroad].—E. & M. J. April 29 1916; p 759; pp 3¾*; 25c.

Paul, H. W.—*Mining in Japan in* 1915. [Production and discussion are given on manganese, pyrite, sulphur, gold, silver, copper, coal and iron].—E. & M. J. Jan. 15 1916; p 133: pp 1½; 25c.

Petre, R. W.—*Manganese in South Carolina.* [A detailed geological description of the same].—E. & M. J. June 10 1916; p 1019; pp 1¼*; 25c.

Purdue, A. H.—*Notes on Manganese in East Tennessee.* [Speaks of the various ores found and places at which they are located. A mineralogical description is also given of the ores and their associated minerals].—Resources of Tenn. April 1916; p 111; pp 13.

Sebast, F. M.; Gray, G. L.—*The Electrical Resistances and Temperature Coefficients of Nickel-Copper-Chromium and Nickel-Copper-Manganese Alloys.* [Gives the results of laboratory tests].—American Electrochem. Soc. Bull. p. 203; pp 10*; 35c.

Singewald, J. T., Jr.; Miller, Benjamin.—*High Grade Manganese Ores of Brazil.* [The deposits of Minas Geraes, their occurrence and methods of operation, with figures on exports to the U. S. are given].—Iron Age Feb. 17 1916; p 417; pp 4*; 30c.

Stark, C. J.—*Development of Ferro Manufacture.* [Deals with the industry, its production and prices which have prevailed during previous years].—I. Tr. Rev. Jan. 6 1916; p 24; pp 4*; 60c.

——— *Manganese Ore Production in* 1915.—Mg. World Feb. 5 1916; p 281; pp ½*; 10c.

MOLYBDENUM

Ball, L. C.—*Notes on a Short Tour in the Gladstone District, Queensland.* [Gold, copper, coal and molybdenum properties were visited and are briefly described].—Queen. Govt. Mg. Jnl. May 15 1916; p 213; pp 1½*; 35c.

Fahrenwald, F. A.—*A Development of Practical Substitutes for Platinum and*

Its Alloys, with Special Reference to the Alloys of Molydenum and Tungsten. [Details are given regarding the making of the alloys and their properties, including a metallographic description].—A. I. M. E. Bull. Jan. 1916; p 103; pp 47*; 35c.

Lamble, B. C.—*The Sampling and Assaying of Molybdenum Ores.* [The methods here given are those practiced by the Orillia Molybdenum Co., Ont.].—Canadian Mg. Jnl. April 15 1916; p 185; pp 1¼; 35c.

Moir, James.—*Some New Methods of Testing for Molybdenum.* [Chemical methods for the qualitative analysis of the mineral].—Jnl. Chem. Met. & Mg. Soc. S. Afr. Mar. 1916; p 191; pp 1; 85c.

——— *Queensland Mining Industry.* [A review of 1915 made by the Under-Secretary for Mines. The condition of all things related to this department is taken up, including the production and condition of the several metal mining industries].—Qeen. Govt. Mg. Jnl. Mar. 15 1916; p 101; pp 17; 35c.

——— *Tungsten-Molybdenum.* [Several briefs on the metals and their minerals, with chemical test and methods of analysis for the same].—Colo. School Mines Mag. Mar. 1916; p 53; pp 6; 35c. Mex. Mg. Jnl. May 1916; p 168; pp 3½; 35c.

TANTALUM

Moir, James.—*Analysis of Niobium-Titanium Minerals, with Some New Tests for Niobium, Tantalum and Titanium.*—Jnl. Chem. Met. & Mg. Soc. S. Afr. Mar. 1916; p 189; pp 2; 85c.

Waites, T. P.—*Notes on Rare Metals in Madagascar.* [Uranium, niobium and tantalum are the minerals considered].—Jnl. Chem. Met. & Mg. Soc. S. Afr. Mar. 1916; p 187; pp 2; 85c.

TITANIUM

Bastin, E. S.; Hill, J. M.—*Preliminary Report on the Economic Geology of Gilpin County, Colorado.* [On the geology of the formation and genesis of ores of gold, copper, uranium, tungsten and titanium].—U. S. G. S. Bull. 620—M; pp 28*.

Moir, James.—*Analysis of Niobium-Titanium Minerals, with Some New Tests for Niobium, Tantalum and Titanium.*—Jnl. Chem. Met. & Mg. Soc. S. Afr. Mar. 1916; p 189; pp 2; 85c.

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Bastin, E. S.; Hill, J. M.—*Prelimina Report on the Economic Geology of G pin County, Colorado.* [On the geolo of the formation and genesis of ores gold, copper, uranium, tungsten a titanium].—U. S. G. S. Bull. 620—M pp 28*.

Bochert, W. C.—*Review of Mini Operations in the Northern Hills, Sou Dakota.* [The history and production the gold, silver and tungsten properti of the state are reviewed in detail thou briefly].—Pahasapa June 1916; p 49; 5*; 30c.

Browne, De Courcy.—*Metals and A loys in the Steel Industry.* [Includ ferro-silicon, ferromanganese, ferr chrome, tungsten, ferrotitanium, etc.].- Iron Age Jan. 6 1916; p 23; pp 1½; 60

Dewey, H.; Bromehead, C. E. N.; Ca ruthers, R. G.—*Special Reports on t Mineral Resources of England.* [Vol. is on tungsten and manganese ores ar Vol. II on the minerals barytes and witl erite].—Geol. Surv. of England, Londor book; 50c.

Down, T. A.—*Tin and Tungsten in Po tugal.* [The results of some sampling an drilling are brought out and with the the geology is described, as also is the methods of concentration].—Mg. Ma Jan. 1916; p 19; pp 6*; 50c.

Fahrenwald, F. A.—*A Development Practical Substitutes for Platinum an Its Alloys, with Special Reference to th Alloys of Molybdenum and Tungsten.* [D tails are given regarding the making the alloys and their properties, includin a metallographic description].—A. I. M E. Bull. Jan. 1916; p 103; pp 47*; 35c.

Fitch, R. S.; Loughlin, G. F.—*Wol ramite and Scheelite at Leadville, Col rado.* [The geology of the formatio containing these minerals is describe and the mineralogy and occurrence o the minerals taken up separately; fro Eco. Geol.].—Mg. World June 3 1916 p 1039; pp 1¾; 10c.

Fleck, Herman. — *Concentration o Tungsten Ore.* [A paper read before th Colorado Scientific Soc.].—M. & S. P. Ja 29 1916; p 166; pp ¾; 20c.

Foote, W. M.—*Unit and Content Price of Tungsten and Other Rare Minerals* —Mg. World Feb. 5 1916; p 279; pp ¾ 10c.

Glasgow, J. W.—*Tungsten Mining a Atolia, California.* [Describes the his tory of the industry and occurrence o the ores].—Mg. & Oil Bull. Jan. 1916; 31; pp 2*; 25c.

Gudgeon, C. W.—*The Scheelite-Gold Mines of Otago, New Zealand.* [The geology is taken up and several properties described. Mill flow-sheets and milling and mining costs are given, besides a brief on a wet method for assaying pyritic scheelite for tungsten].—Proc. Aus. Inst. M. E.; N. S. No. 21 1916; p 37; pp 14*; 65c.

Hartmann, M. L.—*The Chemistry and Metallurgy of Tungsten.* [Thermic methods of refining the compounds of tungsten and methods of qualitative and quantitative analysis are given].—Pahasapa Qt'ly Feb. 1916; p 25; pp 10; 35c.

Hibbs, J. G.—*Boulder County Tungsten District as It Is Today.* [A general review of current conditions and operations in the Boulder field, Colo.].—Mg. World May 20 1916; p 953; pp 1¾; 10c.

Hutchinson, C. T.—*The Tungsten Mines of Atolia, California.* [The district is located on the boundary of San Bernardino and Kern counties].—M. & S. P. May 27 1916; p 797; pp 2*; 20c.

Kirk, Charles T.—*Tungsten District of Boulder County, Colorado.*—M. & S. P. May 27 1916; p 791; pp 4½*; 20c.

Magee, J. F.—*The Milling of Tungsten Ores.* [Small uncovered installations are usually employed in this class of operations in Colorado].—E. & M. J. April 22 1916; p 717; pp 1¾*; 25c.

Maxwell-Lefroy, E.—*Wolframite Mining in the Tavoy District, Lower Burma.* [Brings out the important points in a detailed manner as regards history, geology, law, concentration of ores and mining in general].—Bull. of Inst. Mg. & Met. London; Dec. 9 1915; pp 18; 50c.

McDonald, P. B.—*Scheelite Mining and Grading.* [Gives details of the grades, as sold to the ore buyer for the smelter, and reviews mining of the mineral in southern California].—M. & S. P. Jan. 8 1916; p 40; pp 1½*; 20c.

McDonald, P. B.—*Tungsten Mining in the West.*—M. & S. P. May 20 1916; p 757; pp 1½; 20c.

Miner, F. L.—*The New Milling Plant for the Nevada Tungsten Property.* [A brief description of the deposit and the mill].—Mg. World June 10 1916; p 1078; pp 1*; 10c.

Miner, Fred L.—*Tungsten Camps of White Pine County, Nevada.* [Gives separate descriptions of the tungsten mining companies in this county].—S. L. Mg. Rev. May 30 1916; p 15; pp 3*; 25c.

Nevius, J. N.—*Notes on the Randsburg Tungsten District, California.* [A brief description, including mines and their operation, geology and discussion].—Mg. & Oil Bull. May 1916; p 126; pp 3*; 25c.

O'Harra, C. C.—*Tungsten Production and Prices.* [Reviews the industry for the world but more in particular for the Black Hills district of South Dakota].—Pahasapa Qt'ly Feb. 1916; p 9; pp 4*; 35c.

Parmelee, H. O.—*Recent Practice in Concentrating Colorado Tungsten Ores.* [Treats on both crushing and concentrating of the ores].—Met. & Chem. Engg. Mar. 15 1916; p 301; pp 3*; 30c.

Runner, J. J.—*The Geology of Tungsten Deposits.* [On the mineralogical association and pure mineralogy of tungsten deposits].—Pahasapa Qt'ly Feb. 1916; p 13; pp 10*; 35c. M. & S. P. Mar. 18 1916; p 405; pp 1¾; 20c.

Saint-Smith, E. C.—*Devon Wolfram Mine, Near Coolgarra, Queensland.* [Confined to describing the geology of the deposit].—Queen. Govt. Mg. Jnl. Feb. 15 1916; p 57; pp 1¼*; 35c.

Taft, H. H.—*Notes on the Tungsten Ores of the Southwest.* [The occurrence and nature of these ores located principally in Arizona are given. Some information is also contained on those found in Colorado and New Mexico].—Mg. World June 3 1916; p 1047; pp 1½; 10c.

Willis, C. F.—*Tungsten Mining in Arizona.* [Describes the nature of various deposits in the state].—M. & S. P. June 3 1916; p 824; pp 2*; 20c.

——— *Der Bergbau des Königreichs Sachsen im Jahre* 1914. [Production and operation of the mines in Saxony during 1914].—Glückauf Jan. 22 1916; p 71; pp 5; 50c.

——— *Queensland Mining Industry.* [A review of 1915 made by the Under-Secretary for Mines. The condition of all things related to this department is taken up, including the production and condition of the several metal mining industries].—Queen. Govt. Mg. Jnl. Mar. 15 1916; p 101; pp 17; 35c.

——— *Tungsten Industry and Production in* 1915.—Mg. World Feb. 5 1916; p 279; pp 1; 10c.

——— *Tungsten Mining in the United States.* [From the U. S. G. S. on the industry in 1915].—Mg. & Oil Bull. Feb. 1916; p 61; pp 1¼; 25c.

——— *Tungsten-Molybdenum.* [Several briefs on the metals and their minerals, with chemical test and methods of analysis for the same].—Colo. School Mines Mag. Mar 1916; p 53; pp 5; 35c. Mex. Mg. Jnl. May 1916; p 168; pp 3½; 35c.

URANIUM

Alsdorf, P. R.—*Occurrence, Geology and Economic Value of the Pitchblende Deposits of Gilpin County, Colorado.* [Radium is the principal economic mineral and uranium oxide the main constituent. The deposits and operation of the same are described].—Eco. Geol. May 1916; p 266; pp 13; 60c.

Barker, H. H.; Schlundt, H.—*Experiments on the Separation of Vanadium from Crude Sodium Uranate.* [The methods consist of using ammonium chloride in one case and in the other hydrochloric acid in connection with which leaching may be carried on].—Met. & Chem. Engg. Jan. 1 1916; p 18; pp 5½; 30c.

Bastin, E. S.; Hill, J. M.—*Preliminary Report on the Economic Geology of Gilpin County, Colorado.* [On the geology of the formation and genesis of ores of gold, copper, uranium, tungsten and titanium].—U. S. G. S. Bull. 620—M; pp 28*.

Parsons, C. L.; Moore, R. B.; Lind, S. C.; Schaefer, O. C.—*Extraction and Recovery of Radium, Uranium and Vanadium from Carnotite.* [Abst. of a U. S. Bureau of Mines paper on an acid leaching method].—Jnl. of Indt. & Chem. Engg. Jan. 1916; p 48; pp 5*; 60c.

Waites, T. P.—*Notes on Rare Metals in Madagascar.* [Uranium, niobium and tantalum are the minerals considered].—Jnl. Chem. Met. & Mg. Soc. S. Afr. Mar. 1916; p 187; pp 2; 85c.

——— *Radium, Vanadium and Uranium in* 1915.—Mg. World Feb. 5 1916; 281; pp ½; 10c.

VANADIUM

Barker, H. H.; Schlundt, H.—*Experiments on the Separation of Vanadium from Crude Sodium Uranate.* [The methods consist of using ammonium chlor in one case and in the other hydrochlo acid in connection with which leachi may be carried on].—Met. & Chem. En Jan. 1 1916; p 18; pp 5½; 30c.

Parsons, C. L.; Moore, R. B.; Lin S. C.; Schaefer, O. C.—*Extraction a Recovery of Radium, Uranium and V nadium from Carnotite.* [Abst. of a S. Bureau of Mines paper on an ac leaching method].—Jnl. of Indt. & Che Engg. Jan. 1916; p 48; pp 5*; 60c.

Singewald, J. T., Jr.; Miller, B. L. *The Mining Industry of Peru.* [Besid talking of the metals mined the questi of labor, law and transportation are spo en of].—E. & M. J. May 13 1916; p 84 pp 5½*; 25c.

Turner, W. A.—*The Determination Vanadium by Cupferron.* [The resul of experimental work in which some the reactions are of use as qualitati tests. Cupferron is in the class of nitr ammonium salts].—Amr. Jnl. of S April 1916; p 39; pp 5; 60c.

——— *Radium, Vanadium and Ur nium in* 1915.—Mg. World Feb. 5 1916; 281; pp ½; 10c.

CHAPTER VII.

TIN, NICKEL, COBALT, ALUMINUM.

TIN

Angwin, B.—*Cornish Mines During 1915, England.* [Gives the revenues, production and costs at the principal mines during 1915. Considerable of the information is in tabulated form].—Mg. Mag. April 1916; p 204; pp 2; 50c.

Bliek, P. F.; Söhnlein, M. G. F.—*Bolivian Tin Mining in* 1915. [Brings out figures and information on the production and conditions in the field during the year. Particularly tin and copper].—E. & M. J. Jan. 22 1916; p 173; pp 2½*; 25c.

Brooks, A. H.—*Mining in Alaska in* 1915. [Reprint of an advance report of the U. S. G. S. on the production and operations of the district in which the principal minerals are copper, gold, silver, antimony, tin and other unimportant ores].—M. & S. P. Jan 8 1916; p 51; pp 6*; 20c.

Coltman, R. W.—*The Iodide Method Applied to the Determination of Copper in the Presence of Tin.* [From the Jnl. of Industrial & Engg. Chem.].—Chem. Eng. Jan. 1916; p 38; pp 1⅓; 35c.

Down, T. A.—*Tin and Tungsten in Portugal.* [The results of some sampling and drilling are brought out and with them the geology is described, as also is their method of concentration].—Mg. Mag. Jan. 1916; p 19; pp 6*; 50c.

Geary, W. P.—*Mining, Australasia in* 1915. [On the gold, silver, copper, lead and tin industries and production].—E. & M. J. Jan. 8 1916; p 126; pp 2; 25c.

Godfrey, J. R.—*The Ardlethan Tinfield, N. S. W., Australia.* [Abst. from a N. S. W. Geological Survey report].—Mg. & Engg. Rev. Jan 5 1916; p 93; pp 2; 35c.

Jamieson, G. S.—*On the Volumetric Determination of Tin by Potassium Iodate.* [Gives the results of some analyses made and a complete chemical explanation of the method of procedure].—Jnl. Ind. & Chem. Engg. June 1916; p 500; pp 2; 60c.

Jones, W. R.—*Mineralization in Malaya.* [A detailed description of the ore-bearing formation and theories of their origin and that of the ores contained therein].—Mg. Mag. Dec. 1915; p 322; pp 9*; 50c.

Matheson, A. M.—*Notes on the Chemical Assay of Tin Ores.* [Shows the difference between fire and chemical assays on high pyritic tin ores and the impossibility of estimating mill losses by the vanning and fire assay].—Proc. Aus. Inst. M. E.; N. S. No. 21 1916; p 1; pp 7; 65c.

Nicholls, H. E.—*A Pioneer Bucket Dredge in Northern Nigeria.* [Placer tin is mined, and semi-Diesel engines used for power. Details of mining costs are given].—Bull. Inst. of Mg. & Met., London, No. 137; pp 13*; 50c. Mg. World April 8 1916; p 691; pp 3½*; 10c.

Nicholls, H. E.—*The Nature of Nigerian Tin Deposits.* [Discusses the mode of occurrence of cassiterite and does not agree with the theory that the deposits are secondary. Gives examples of the alluvial deposits coming from the weathered granites and lodes].—Mg. Mag. June 1916; p 231; pp 3*; 50c.

Read, A. A.—*Some Tin-Aluminum-Copper Alloys.* [A paper read before the British Inst. of Metals. Various diagrams and tables of information are given, showing composition and other characters].—Engg. April 7 1916; p 335; pp 1⅔*; 35c.

Rickard, T. A.—*Philip Argall and Metallurgical Progress.* [A review of Mr. Argall's life in the mining field, including experience with gold, tin, copper, etc.].—M. & S. P. Jan. 22 1916; p 119; pp 12*; 20c.

Saint-Smith, E. C.—*Boulder West Mine, Gurrumbah, Queensland.* [A report of the geology and treatment of the ore made by the government].—Queen. Govt. Mg. Jnl. Feb. 15 1916; p 55; pp 2½*; 35c.

Schaller, W. T.—*Cassiterite in San Diego County, California.* [An investigation made to ascertain the extent of a small finding made during 1914].—U. S. G. S. Bull. 620-P; pp 4*.

Sohnlein, M. G. F.—*A Combined Hydraulic and Mechanical Classifier.* [A type especially designed for use in a Bolivia tin concentrating plant].—Bull. A. I. M. E. April 1916; p 715; pp 6*; 35c. Mg. World June 3 1916; p 1049; pp 1*; 10c.

Vail, R. H.—*Tin Smelting at Perth Amboy, N. J.*—Bolivian concentrates are handled here and the first tin was produced on Mar. 7. The concentrates are first smelted and cast into anodes, after which they are electrolytically refined].—E. & M. J. May 27 1916; p 927; pp 2¾*; 25c.

Vogelstein, L.—*Buying and Selling Nonferrous Metals of South America.* [A paper read before the Pan-American Scientific Cong. Besides buying, selling and transportation it speaks of the incapacity of U. S. smelters driving the trade to England].—E. & M. J. Feb. 12 1916; p 292; pp 4½; 25c.

——— *Advances in the Bolivian Tin Smelting Industry.* [Shows advances made towards smelting the concentrates in the Americas rather than Europe].—Mg. World Feb. 12 1916; p 354; pp¾; 10c.

——— *Annan River Company's Pumping Plant, Cooktown Tinfields.* [Detailed figures are given on this pump for a tin-dredging proposition in Queensland].—Queen. Govt. Mg. Jnl. April 15 1916; p 161; pp 1*; 35c.

——— *Bolivian Tin in the United States.* [Speaks in a general way of the industry in Bolivia and correlates it with the U. S.].—Pan-American Union Feb. 1916; p 184; pp 19*; 35c.

——— *Bucket Dredging in Northern Nigeria.* [Some details are given in this general description of placer tin-dredging].—S. Afr. Engg. April 1916; p 63; pp 1*; 35c.

——— *Der Bergbau des Königreichs Sachsen im Jahre* 1914. [Production and operation of the mines in Saxon during 1914].—Glückauf Jan. 22 1916; p 71; pp 5; 50c.

——— *Hydrometallurgy of Zinc and Lead in* 1915. [A contribution from the Met. Research Department, Univ. of Utah, giving a resume of operations and advances in this process during the year].—Met. & Chem. Engg. Jan. 1 1916; p 30; pp 2¾; 30c.

——— *Metals.* [Reviews the tin and copper industry and production with respect to the British empire].—Mg. Jnl. Jan. 29 1916; p 65; pp 3¾; 35c.

———. *Queensland Mining Industry.* [A review of 1915 made by the Under-Secretary for Mines. The condition of all things related to this department is taken up, including the production and condition of the several metal mining industries].—Queen. Govt. Mg. Jnl. Mar. 15 1916; p 101; pp 17; 35c.

——— *The Union Tin Industry in* 1915, *South Africa.* [Gives the operation of companies and cost of tin plant in these placer fields].—S. Afr. Mg. Jnl. Dec. 18 1915; p 367; pp 1; 35c.

——— *Tin.* [A general review of the situation in this industry with figures on production in many instances].—Mg. Jnl. April 8 1916; p 231; pp 1¼; 35c.

——— *Tin Industry and Consumption in* 1915. [Takes up the conditions with special reference to United States].—Mg. World Feb. 5 1916; p 277; pp 1¾*; 10c.

——— *Tin Smelting Now an American Industry.* [Editorial on the subject].—Mg. World Jan. 15 1916; p 126; pp 1; 10c.

NICKEL

Gibson, T. W.—*Mining in Ontario in* 1915. [A general review of gold, silver, copper, nickel and iron mining in the province during 1915].—E. & M. J. Jan. 8 1916; p 121; pp 1¼; 25c. Canadian Mg. Jnl. Mar. 1 1916; p 110; pp 1; 35c.

Gibson, T. W.—*The Mining Industry of Ontario in* 1915. [Treats on the gold, silver, copper and nickel production of the province].—Canadian Mg. Inst. Bull. Jan. 1916; p 16; pp 4½; 35c.

Gibson, T. W.—*The Nickel Mines of Ontario.* [Abstracted from the London Financial Times. A general review of the situation is made].—Mg. World April 15 1916; p 744; pp ¾; 10c.

Hollinshead, A. D.; Turner, J.; Mellor, J. W.—*Cobalt and Nickel Colors.* [Takes up in detail the coloring of pottery with these metals].—Trans. of Eng. Ceramic Soc. 1914-15; p 167; pp 12*; 65c.

Knight, C. W.—*Origin of Sudbury Nickel Copper Deposits.* [Published by permission of the Provincial Geologist].—E. & M. J. May 6 1916; p 811; pp 2*; 25c.

McLeish, John.—*Annual Report on the Mineral Production of Canada,* 1914. [Each mineral is reported on separately. The imports, exports, production and condition of the trade are given].—Canada Dept. of Mines, Mines Branch, No. 384; pp 362.

McLeish, John.—*Preliminary Report of the Mineral Production of Canada in* 1915. [The principal minerals are lead, zinc, copper, silver, gold, nickel, asbestos, coal and iron].—Canada Dept. of Mines, Mines Branch Report 408; pp 28.

Riddle, C. M., Jr.—*Monel Metal.* [This is a natural alloy containing about 70% nickel and 30% copper].—Steam Feb. 1916; p 37; pp 1½; 35c.

Sebast, F. M.; Gray, G. L.—*The Electrical Resistances and Temperature Coefficients of Nickel-Copper-Chromium and Nickel-Copper-Manganese Alloys.* [Gives the results of laboratory tests].—American Electrochem. Soc. Bull. p 203; pp 10*; 35c.

Stansfield, A.—*Electric Furnaces as Ap-*

plied to Non-Ferrous Metallurgy. [A paper read before the Institute of Metals and bearing on zinc, copper, nickel, lead, antimony, etc.].—Mg. Jnl. April 29 1916; p 291; pp 1½; 35c.

——— *Der Bergbau des Königreichs Sachsen im Jahre* 1914. [Production and operation of the mines in Saxon during 1914].—Glückauf Jan. 22 1916; p 71; pp 5; 50c.

——— *Invar and Related Nickel Steels.* [A compilation of figures and other information on the properties of various nickel-steel alloys, and especially Invar].—U. S. Bur. of Stand. Circular 58; pp 68*.

——— *Mineral Production of Canada in* 1915. [Abst. from a preliminary report of the Canada Department of Mines].— Mg. World Mar. 11 1916; p 523; pp 2¼; 10c. E. & M. J. Mar. 11; p 483; pp 2; 25c.

——— *Mining Manganese Ore in Virginia.* [Open pit operations are followed and the methods of crushing and washing the clay-like ore obtained are described]. —Iron Age Mar. 30 1916; p 776; pp 2*; 30c.

CERIUM

Miller, B. L.; Singawald, J. T.—*Mining Industry in Brazil* [Principally gold, manganese, monasite sands and gems, though deposits of iron not being worked are there. Speaks of the government railroad].—E. & M. J. April 29 1916; p 759; pp 3¾*; 25c.

COBALT.

Bridges, R. V.—*The Metallurgy of Canadian Cobalt Ores.* [The results of much satisfactory investigating. Nickel, arsenic, cobalt and silver are obtained and details are given on a 3-months test of roasting in regard to the silver losses]. —Canadian Mg. Jnl. Feb. 1 1916; p 68; pp 2; 35c.

Hollinshead, A. D.; Turner, J.; Mellor, J. W.—*Cobalt and Nickel Colors.* [Takes up in detail the coloring of pottery with these metals].—Trans. of Eng. Ceramic Soc. 1914-15; p 167; pp 12*; 65c.

Mason, F. H.—*Cobalt: Its Possible Uses.*—M. & S. P. June 24 1916; p 940; pp 1½; 20c.

——— *Der Bergbau des Königreich Sachsen im Jahre* 1914. [Production and operation of the mines in Saxony during 1914].—Glückauf Jan. 22 1915; p 71; pp 5; 50c.

ALUMINUM

Clennell, J. E.—*Estimating Aluminum in Aluminum Dust.* [Comparative methods are herein described for estimating the aluminum in aluminum-dust for cyanidation work].—E. & M. J. May 6 1916; p 813; pp 2¼; 25c.

Clevenger, G. H.—*Aluminum Dust.* [Describes the uses and manufacture of this product, which is of importance in the cyanide process and is coming into use for explosives].—M. & S. P. Jan. 22 1916; p 118; pp 1; 20c.

Lyon, D. A.; Keeney, R. M.—*Feasibility of Western Electro-Metallurgy.* Deals with iron, aluminum, zinc, copper, costs and other items of importance].— Jnl. of Elect. Power & Gas Mar. 25 1916; p 237; pp 3¾*; April 1 1916; p 262; pp 2; April 8; p 282; pp 3; April 15; p 296; pp 2½; $1.40.

Minnig, H. D.—*The Separation and Estimation of Aluminum and Beryllium by the Use of Acetyl Chloride in Acetone.* [Chemical details of procedure]. —Amer. Jnl. of Sci. Nov. 1915; p 482; pp 3; 60c.

Pascal, Paul; Jouniaux, A. — *Physikalisch-Chemische Untersuchungen Ueber die Elektrometallurgie des Aluminiums.* [On the electrometallurgy of aluminum]. —Zts. Elecktrochemie Feb. 1 1916; p 71; pp 4*; 50c.

Read, A. A.—*Some Tin-Aluminum-Copper Alloys.* [A paper read before the British Inst. of Metals. Various diagrams and tables of information are given showing composition and other characters].—Engg. April 7 1916; p 335; pp 1⅞*; 35c.

Seligman, R.; Williams, P.—*The Action of Boiling Acetic, Propionic and Butyric Acids on Aluminum, with a Note on the Action of Formic and Some Higher Acids.* [Results of experimental work].—Jnl. of Soc. Chem. Indst. Jan. 31 1916; p 88; pp 5½; 50c.

Stansfield, Alfred—*Electric Furnaces as Applied to Non-Ferrous Metallurgy.* [A paper read before the Institute of Metals on the use of the furnace for refining aluminum, magnesium, zinc, sodium, potassium, calcium, barium, strontium and cerium].—Mg. Jnl. April 8 1916; p 233; pp 2; 35c.

Wysor, D. C.—*Aluminum Hydrates in the Arkansas Bauxite Deposits.* [Describes the deposits and gives the analysis of many samples taken from the various separate deposits].—Econ. Geol. Jan. 1916; p 42; pp 9; 65c.

——— *Aluminum Production and Consumption in* 1915.—Mg. World Feb. 5 1916; p 269; pp ¾; 10c.

——— *Niagara Falls Power and American Industries.* [A synopsis of papers read before the American Elec chemical Soc. Steel alloys and the loying metals are taken up].—Met Chem. Engg. May 1 1916; p 507; pp 30c.

CHAPTER VIII.

Miscellaneous Metals and Ores.

MERCURY

Doelter, C.—*Die Mineralschätze der Türkei.* [Gives separate briefs on the mineral resources of Turkey, including chromium, iron, gold, antimony, silver, lead, mercury and copper].—Montanist. Rund. April 16 1916; p 217; pp 4; 35c.

Hamilton, Fletcher.—*Concentration of Quicksilver Ores in California.* [Tests are being made as to the applicability of concentrating before the thermic treatment. High extraction by water concentration and flotation is claimed].—Mg. World May 27 1916; p 997; pp 1; 10c.

Landers, W. H.—*Quicksilver Mining in California.* [Confined to discussing the troubles encountered in smelting cinnabar. Mercury vapors permeate the furnace walls and structure].—M. & S. P. Feb. 19 1916; p 282; pp 2¾*; 20c.

Lang, Herbert.—*Quicksilver Reduction.* [The nature of the ores, methods of assay, concentration of ores, metallurgy and condensation of the metal and diseases caused from mercury are taken up].—M. & S. P. May 13 1916; p 707; pp 8*; 20c.

Ransome, F. L.—*Quicksilver Deposits on the Mazatzal Range of Arizona.* [Abst. from a U. S. G. S. report giving a general account of the district and its geology].—Mg. World Jan. 8 1916; p 81; pp 1½*; 10c.

Singewald, J. T., Jr.; Miller, B. L.—*The Mining Industry of Peru.* [Besides talking of the metals mined the question of labor, law and transportation are spoken of].—E. & M. J. May 13 1916; p 845; pp 5½*; 25c.

Wheler, A. S.—*Metalliferous Mines of Hunan.* [Abst. from the Far Eastern Review. A general description of the deposits and operations. They are principally antimony, some mercury and gold]. M. & S. P. Mar. 4 1916; p 337; pp 5*; 20c.

Willis, C. F.—*Mining in Northern Arizona.* [A general review of gold, mercury and copper mining in that part of the state].—M. & S. P. April 29 1916; p 625; pp 1¾*; 20c.

——— *Italian Mineral Industry.* [Gives the production, prices, etc., prevailing in the several mineral industries of the country, principal of which are sulphur, zinc, iron ore, mercury and other less important minerals].—Mg. Jnl. April 29 1916; p 286; pp 2; 35c.

——— *Pan-American Congress, Proceeding of the Second Meeting.* [Abstracts of the more important papers read].—Mg. World Jan. 8 1916; p 63; pp 7; 10c.

——— *Quicksilver Output in the United States in 1915.*—Mg. World Feb. 5 1916; p 273; pp ¾; 10c.

OSMIUM

Preston, T. H.—*The Urals and Their Mineral Wealth.* [Steel, copper, platinum, osmiridium and miscellaneous other minerals are reviewed as regards their industry and production].—Mg. Mag. April 1916; p 197; pp 5; 50c.

RADIUM AND RADIOACTIVES

Alsdorf, P. R.—*Occurrence, Geology and Economic Value of the Pitchblende Deposits of Gilpin County, Colorado.* [Radium is the principal economic mineral and uranium oxide the main constituent. The deposits and operation of the same are described].—Eco. Geol. May 1916; p 266; pp 13; 60c.

Boltwood, B. B.—*The Life of Radium.* [Deals with theories and tests on the number of years which radium will hold its natural properties and not break up into other elements].—Radium April 1916; p 9; pp 7½*; 35c.

Gleditsch, Ellen.—*The Life of Radium.* [Radium was generally believed to disintegrate from uranium, but of late it has been found to disintegrate from ionium and the article treats on a theory regarding a constant for obtaining the rate at which it disintegrates from ionium solutions].—Amer. Jnl. of Sci. Jan. 1916; p 112; pp 13; $1.10.

MacArthur, J. S.—*The Extraction of Radium.*—Mg. Mag. Feb. 1916; p 86; pp 2; 50c.

Parsons, C. L.; Moore, R. B.; Lind, S. C.; Schaefer, O. C.—*Extraction and Recovery of Radium, Uranium and Vanadium from Carnotite.* [Abst. of a U. S. Bureau of Mines paper on acid leaching method].—Jnl. of Indt. & Chem. Engg. Jan. 1916; p 48; pp 5*; 60c.

Pratt, L. S.—*Radio-Activity of Allanite.*—Bull. A. I. M. E. May 1916; p 685; pp 1; 35c.

Russell, A. S.—*Rare Earth Industry.*

Its Alloys, with Special Reference to the Alloys of Molydenum and Tungsten. [Details are given regarding the making of the alloys and their properties, including a metallographic description].—A. I. M. E. Bull. Jan. 1916; p 103; pp 47*; 35c.

Lamble, B. C.—*The Sampling and Assaying of Molybdenum Ores.* [The methods here given are those practiced by the Orillia Molybdenum Co., Ont.].—Canadian Mg. Jnl. April 15 1916; p 185; pp 1¼; 35c.

Moir, James.—*Some New Methods of Testing for Molybdenum.* [Chemical methods for the qualitative analysis of the mineral].—Jnl. Chem. Met. & Mg. Soc. S. Afr. Mar. 1916; p 191; pp 1; 85c.

——— *Queensland Mining Industry.* [A review of 1915 made by the Under-Secretary for Mines. The condition of all things related to this department is taken up, including the production and condition of the several metal mining industries].—Qeen. Govt. Mg. Jnl. Mar. 15 1916; p 101; pp 17; 35c.

——— *Tungsten-Molybdenum.* [Several briefs on the metals and their minerals, with chemical test and methods of analysis for the same].—Colo. School Mines Mag. Mar. 1916; p 53; pp 6; 35c. Mex. Mg. Jnl. May 1916; p 168; pp 3½; 35c.

TANTALUM

Moir, James.—*Analysis of Niobium-Titanium Minerals, with Some New Tests for Niobium, Tantalum and Titanium.*—Jnl. Chem. Met. & Mg. Soc. S. Afr. Mar. 1916; p 189; pp 2; 85c.

Waites, T. P.—*Notes on Rare Metals in Madagascar.* [Uranium, niobium and tantalum are the minerals considered].—Jnl. Chem. Met. & Mg. Soc. S. Afr. Mar. 1916; p 187; pp 2; 85c.

TITANIUM

Bastin, E. S.; Hill, J. M.—*Preliminary Report on the Economic Geology of Gilpin County, Colorado.* [On the geology of the formation and genesis of ores of gold, copper, uranium, tungsten and titanium].—U. S. G. S. Bull. 620—M; pp 28*.

Moir, James.—*Analysis of Niobium-Titanium Minerals, with Some New Tests for Niobium, Tantalum and Titanium.*—Jnl. Chem. Met. & Mg. Soc. S. Afr. Mar. 1916; p 189; pp 2; 85c.

TUNGSTEN

Bastin, E. S.; Hill, J. M.—*Preliminary Report on the Economic Geology of Gilpin County, Colorado.* [On the geology of the formation and genesis of ores of gold, copper, uranium, tungsten and titanium].—U. S. G. S. Bull. 620—M; pp 28*.

Bochert, W. C.—*Review of Mining Operations in the Northern Hills, South Dakota.* [The history and production of the gold, silver and tungsten properties of the state are reviewed in detail though briefly].—Pahasapa June 1916; p 49; pp 5*; 30c.

Browne, De Courcy.—*Metals and Alloys in the Steel Industry.* [Includes ferro-silicon, ferromanganese, ferro-chrome, tungsten, ferrotitanium, etc.].—Iron Age Jan. 6 1916; p 23; pp 1½; 60c.

Dewey, H.; Bromehead, C. E. N.; Carruthers, R. G.—*Special Reports on the Mineral Resources of England.* [Vol. I is on tungsten and manganese ores and Vol. II on the minerals barytes and witherite].—Geol. Surv. of England, London; book; 50c.

Down, T. A.—*Tin and Tungsten in Portugal.* [The results of some sampling and drilling are brought out and with them the geology is described, as also is their methods of concentration].—Mg. Mag. Jan. 1916; p 19; pp 6*; 50c.

Fahrenwald, F. A.—*A Development of Practical Substitutes for Platinum and Its Alloys, with Special Reference to the Alloys of Molybdenum and Tungsten.* [Details are given regarding the making of the alloys and their properties, including a metallographic description].—A. I. M. E. Bull. Jan. 1916; p 103; pp 47*; 35c.

Fitch, R. S.; Loughlin, G. F.—*Wolframite and Scheelite at Leadville, Colorado.* [The geology of the formation containing these minerals is described, and the mineralogy and occurrence of the minerals taken up separately; from Eco. Geol.].—Mg. World June 3 1916; p 1039; pp 1¾; 10c.

Fleck, Herman. — *Concentration of Tungsten Ore.* [A paper read before the Colorado Scientific Soc.].—M. & S. P. Jan. 29 1916; p 166; pp ¾; 20c.

Foote, W. M.—*Unit and Content Prices of Tungsten and Other Rare Minerals.*—Mg. World Feb. 5 1916; p 279; pp ¾; 10c.

Glasgow, J. W.—*Tungsten Mining at Atolia, California.* [Describes the history of the industry and occurrence of the ores].—Mg. & Oil Bull. Jan. 1916; p 31; pp 2*; 25c.

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——— *The Rands Shaking Loader.* [A loader which tends to place the coal from above into the railroad car more gently so as not to break the more friable coals].—Coal Age April 1 1916; p 578; pp 1¾*; 20c.

Mechanical Cutters

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——— *Ford Collieries Co., New No.* 3 *Mine. Pennsylvania.* [After a general description of the surface, equipment and power plant methods of cutting and haulage are taken up].—Elect. Mg. April 1916; p 33; pp 18*; 20c.

——— *Permissible Coal Cutters.* [Describes a cutter and casing as approved by the U. S. Bureau of Mines to be an explosion-proof machine].—Coal Age Feb. 19 1916; p 326; pp 2¼*; 20c.

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Carpenter, H. V.—*Producer Gas Power from Northwestern Coals.* [Abst. from the Jnl. of the Oregon Soc. of Engineers].—Jnl. of Elect. Power & Gas April 1 1916; p 264; pp 1¼; 35c.

Haanal B. F.—*The Value of Peat Fuel for Power.* [Compares peat as a fuel with coal, bringing out factors in regard to their respective costs and efficiency].—Jnl. American Peat Soc. April 1916; p 47; pp 15*; $1.60.

——— *The Oliphant-Johnson Coal Co.'s Mine No.* 1. [The coal seam, power plant, preparation of the coal and other less important items are taken up].—Coal Age Mar. 4 1916; p 409; pp 3½*; 20c.

Electricity in Coal Mining

Clark, H. H.; Breth, N. V.; Means, C. M.—Shot Firing *in Coal Mines by Elec-*

tricity Controlled from Outside. [Describes 9 different systems separately besides general discussion on the subject]. —U. S. Bur. of Mines Tech. Paper 108; pp 36. C. Tr. Bull. May 1 1916; p 53; pp 4; 25c.

Clement, J. K.; Scholl, L. A.—*The Inflammability of Illinois Coal Dusts.* [Contains a description of the electrical apparatus used and results of the tests on samples from different places in the same district and from different districts. Results are tabulated and plotted as curves]. —U. S. Bur. of Mines Bull. 102; pp 7*; 25c.

Elliott, H.—*Electrical Plant at Frickley Colliery, England.* [A paper read before the Assn. of Electrical Mining Eng.].— I. & C. Tr. Rev. Mar. 24 1916; p 336; pp 2⅛; 35c.

Foley, F. J.—*Storage-Battery Locomotive in a Coal Mine.* [Describes the motor and compares it with mule-haulage]. —Coal Age April 1 1916; p 587; pp 2¾*; 20c.

Reed, J. W.—*Methods of Mining and Preparation of Coals for Market in Inspection District No.* 3. [Mining methods, ventilation, mining machines, blasting, haulage and electricity are the principal subjects considered].—Ky. Dept. of Mines 1915; Annual Report III; pp 108*.

Warren, H. M.; Biesecker, A. S.; Powell, E. J.—*Tests on Various Electric Motor-Driven Equipment Used in the Preparation of Coal.* [A number of tests are given with curves and reproductions of recording charts obtained from operations principally from the tipple].—A. I. M. E. Bull. Feb. 1916; p 181; pp 13*; 35c.

Young, C. M.—*Underwood—A Modern Colliery, Pa.* [Describes the shaft arrangements and power, which is both steam and electricity, besides their operation of preparing the coal for market].—Coal Age Jan. 1 1916; p 4; pp 7¼*; 20c.

Explosives, Blasting

Blatchford, A. S.—*Influence of Incombustible Substances on Coal Dust Explosions.* [A paper read before the North of England Institute of Mining and Mechanical Engineers].—Coll'y Guard. April 14 1916; p 704; pp 1⅛*; 35c.

Clark, H. H.; Breth, N. V.· Means, C. M.—*Shot Firing in Coal Mines by Electricity Controlled from Outside.* [Describes 9 different systems separately besides general discussion on the subject]. —U. S. Bur. of Mines Tech. Paper 108; pp 36. C. Tr. Bull. May 1 1916; p 53; pp 4; 25c.

Fay, A. H.—*Coal Mine Fatalities in the United States in March,* 1916. [A list of permissible explosives, lamps and motors tested prior to May 1, 1916, is also given]. —U. S. Bur. of Mines Monthly Statement; pp 22.

Fay, A. H.—*Coal Mine Fatalities in the United States in March,* 1916. [A list of permissible explosives, lamps and motors tested prior to May 1, 1916, is also given]. —U. S. Bur. of Mines Monthly Statement; pp 22.

Explosions—Mine Fires, Gases, Coal Dust, Fire Damp, Etc.

Briggs, Henry.—*Rapid Estimation of Oxygen and Blackdamp.* [A paper read before the Mining Inst. of Scotland].— Coll'y Guard. Feb. 25 1916; p 359; pp 2*; 35c.

Burrell, G. A.—*A New Firedamp Detector.* [A paper read before the West Virginia Coal Mining Inst. The device will detect the gas to within 0.1%].—Coal Age Jan. 22 1916; p 157; pp 2*; 20c.

Burrell, G. A.; Oberfell, G. C.—*Explosibility of Gases from Mine Fires.* [Is confined to the coal mining industry].—U. S. Bur. of Mines Tech. Paper 134; pp 31*; 15c.

Burrell, G. A.; Oberfell, G. G.—*The Limits of Inflammability of Mixtures of Methane and Air.* [Experimental work on the explosive properties of this mixture].—U. S. Bur. of Mines Tech. Paper 119; pp 30*.

Cain, Joseph.—*Sealing Off Mine Fires.* [A paper read before the Kentucky Mining Inst.].—Coll'y Guard. Mar. 17 1916; p 520; pp 1*; 35c.

Clement, J. K.; Scholl, L. A., Jr.—*The Inflammability of Illinois Coal Dust.* [Tests on the inflammability of different samples, giving the pressure made by same at different temperatures].—U. S. Bur. of Mines; Bull. 102; pp 74*; 25c.

Evans, E. C.—*Carbon Dioxide in Extinguishing Mine Fires.* [A paper read before the Manchester Geol. & Mining Soc.].—Coll'y Guard. Mar. 17 1916; p 508; pp 1; Mar. 24; p 558; pp 2*; 70c.

Hauser, E.—*Researches on Fire-Damp.* [A paper read before the A. I. M. E.; translated from the French and describing many laboratory tests and results of investigations in practice].—C. Tr. Bull. Feb. 15 1916; p 30; pp 6½; 25c.

Morgan, J. D.—*Notes on the Ignition of Explosive Gas Mixtures by Electric Sparks.* [A paper read before the Inst.

of Elect. Eng.].—Coll'y Guard. Jan. 14 1916; p 66; pp 2*; 35c.

Peasegood, W. G.—*Gob Fires at Leycett Collieries, England.* [A paper read before the North Staffs Branch of the National Assn. of Colliery Mng.].—I. & C. Tr. Rev. May 12 1916; p 546; pp 1⅓*; 35c.

Richards, W. B.—*Fighting an Anthracite Mine Fire.* [Describes a fire and the extinguishing of the same at a colliery of the Lehigh Coal & Navigation Co.'s property, Pennsylvania].—Coal Age June 10 1916; p 1013; pp 4¼*; 20c.

Thomas, T. J.—*Firedamp Detectors for Miners' Safety Lamps.* [A number of tests made by use of platinum wire and electricity. The results are given].—Coll'y Guard. April 28 1916; p 799; pp 1½*; 35c.

Thomas, T. J.—*Gas Detector for Miners' Safety Lamps.* [All apparatus for use in conjunction with the lamps is described with the lamp].—Coll'y Guard. Jan. 28 1916; p 172; pp 1½*; 35c.

——— *Explosion Near Kempton, W. Va.* [An explosion of coal dust at No. 42 mine of the Davis Coal & Coke Co.].—Coal Age Mar. 18 1916; p 498; pp 2*; 20c.

——— *Ravensdale, Washington, Mine Disaster.* [The cause of the explosion has not been decided and the information here given is rather in the form of discussion].—Coal Age Mar. 11 1916; p 459; pp 3½*; 20c.

——— *Rock-Dusting Machinery, General Specifications for.* [A certain amount of rock dust mixed with the coal dust will tend to prevent explosion of the latter. Specifications for a machine to spray this dust are here given].—Coal Age April 15 1916; p 672; pp 1½*; 20c.

Safety, Rescue, First Aid, Sanitation

Evans, Nicholas.—*Inspector's View of Mine Safety.* [Evans is state mine inspector at Johnstown, Pa., and here discusses his ideas and the general question of coal mine safety].—Coal Age April 22 1916; p 707; pp 2; 20c.

Harris, D. M.—*Dangers of Machine Mining in Anthracite Coal.* [A paper read before Safety First Organization of the Delaware, Lackawanna & Western].—Coal Age May 20 1916; p 874; pp 2¼*; 20c.

——— *Report of the Department of Mines, Pennsylvania.* [Gives the steps taken towards safety and sanitation and preventing accidents, with an account of those which occurred. Tables on the production of the various coal mines are given and show the collective production of the districts and state].—Dept. of Mines, Pa., 1914; pp 614.

——— *Reviews of Coal Mining in* 1915. [Reviews by different authors for the producing states, giving production and general conditions of the industry therein. The transportation question is dealt with some, as is the question of accidents and safety].—Coal Age Jan. 8 1916; p 38; pp 21; 20c.

Lighting, Signalling

Fay, A. H.—*Coal Mine Fatalities in the United States,* 1915. [Besides tables and description regarding accidents lists are given of permissible explosives, electric lamps and motors, tested prior to Jan. 1 1916].—U. S. Bur. of Mines; pp 80*; 20c.

Fay, A. H.—*Coal Mine Fatalities in the United States,* 1915. [Besides tables and description regarding accidents lists are given of permissible explosives, electric lamps and motors, tested prior to Jan. 1 1916].—U. S. Bur. of Mines; pp 80*; 20c.

Ventilation

Cornet, F. C.—*Effect of Barometric Pressure to Derange or Stop Ventilation.* [Discusses many points, among which is a statement that a fall in the presure causes an outflow of gases from the mine waste].—Coal Age Jan. 22 1916; p 159; pp 1¾; 20c.

Saxon.—*Mine Ventilation.* [Confined to coal mining operations, with explanation of formulae and theory].—Sci. & Art of Mg. Jan. 29 1916; p 290; pp 2½*; 35c.

Shanks, John.—*Notes on Mine Ventilation.* [Abst. from the Canadian Mining Inst. Bull.].—Coll'y Guard. Jan. 21 1916; p 131; pp 1*; 35c.

Valiquet, H. H.—*Important Features in Mine-Ventilating Fans.* [Methods for figuring new systems and for determining new additions to installed systems].—Coal Age Jan. 15 1916; p 123; pp 2*; 20c.

——— *Rearrangement of the Ventilation System at the Wallsend and Hebburn Collieries, England.* I. & C. Tr. Rev. May 19 1916; p 576; pp 2-3*; 35c.

Accidents

Fay, A. H.—*Coal Mine Fatalities in the United States,* 1915. [Besides tables and description regarding accidents lists are given of permissible explosives, electric lamps and motors, tested prior to Jan. 1 1916].—U. S. Bur. of Mines; pp 80*; 20c.

Fay, A. H.—*Coal Mine Fatalities in the United States in March,* 1916. [A list of permissible explosives, lamps and motors

tested prior to May 1, 1916, is also given]. —U. S. Bur. of Mines Monthly Statement; pp 22.

Young, C. M.—*Cave at the Prospect Colliery, Pennsylvania.* [The roof caved and a directly overhead stream flowed into the mine. The accident is described and also the method for handling the trouble].—Coal Age Feb. 26 1916; p 373; pp 2¼*; 20c.

Labor, Management, Sociological

Dean, Samuel.—*Output Per Man Here and Abroad.* [The author points out many reasons as to why more coal can be taken per man in this country than abroad].—Coal Age April 8 1916; p 631; pp 2¼; 20c.

Deloney, I. C.—*The Efficient Mine Foreman.* [A paper read before the Alabama Safety Assn.].—Coal Age Feb. 19 1916; p 338; pp 2; 20c.

Field, E. B.—*The Little Brass Check in the Crow's Nest, Pennsylvania.* [Describes a system using brass checks for accounting for the number of cars a miner has taken out. They use purchased electric power].—Coal Age Mar. 18 1916; p 488; pp 2¼*; 20c.

Pratt, W. E.—*Coal in the Philippines.* [Treats on the geology, quality, taxes imposed, mining law and labor].—Coal Age Mar. 18 1916; p 491; pp 6½; 20c.

Singewald, J. T., Jr.; Miller, B. L.—*The Mining Industry of Peru.* [Besides talking of the metal mined the question of labor, law and transportation are spoken of].—E. & M. J. May 13 1916; p 845; pp 5½*; 25c.

——— *Labor Difficulties in* 1915. [A review of labor strikes, their cause and outcome].—Coal Age Jan. 8 1916; p 84; pp 1¾; 20c.

Economics of Coal Mining

Armstrong, H. E.—*The Problems of Coal, with Reference to the Complete and Provident Utilization of the Supplies and of Fuels Generally.* [A preliminary scheme and discussion].—Jnl. of Soc. of Chem. Ind. Feb. 29 1916; p 220; pp 6½; 50c.

Everest, H. A.—*Economics in a Small Coal Mine.* [Takes the subject from a point that there is a difference in operating costs between the large and small operator].—A. I. M. E. Bull. Jan. 1916; p 165; pp 4; 35c.

Hunter, Sherwood.—*Economies in Coal Washing.* [A paper read before the Manchester Geol. and Mining Soc.]. —Coll'y Guard. April 14 1916; p 705; pp 1; 35c.

——— *Economic Aspects of the New Anthracite Sizes.*—Coal Age May 13 1916; p 839; pp 2½; 20c.

——— *Powdered Coal Utilization at Lebanon, Pa.* [Waste-heat boilers are used in conjunction with open-hearth furnaces by the American Iron & Steel Mfg. Co. Details and drawings of their coal crushing plants are given].—Iron Age June 1 1916; p 1317; pp 2¼*; 30c.

Miscellaneous

Bailey, E. G.—*Interpretation of Coal Analysis.* [A paper read before the International Railway Fuel Ass'n. A review of what the results of a coal analysis mean].—Pract. Eng. June 15 1916; p 527; pp 2½; 20c.

Burman, B. F.—*Coal and Coke Efficiency in Blast Furnace Operations.* [A number of tables and accompanying description is given with regard to the efficient use of the fuel].—Met. & Chem. Engg. Feb. 1 1916; p 137; pp 3; 30c.

Burrows, J. S.—*Progress in the Export Trade.* [Although a decline was shown the business was increased with competitive markets and exports would have been higher except for transportation facilities].—Coal Age Jan. 8 1916; p 72; pp 1¾; 20c.

Chance, E. M.—*The Application and Earning Power of Chemistry in the Coal Mining Industry.* [Points out and talks of the savings to be had by the well directed application of chemistry in coal mining. Also speaks of analyzing coals]. Bull A. I. M. E. April 1916; p 711; pp 4; 35c. Met. & Chem. Engg. April 15 1916; p 441; pp 2; 30c.

Childs, W. H.—*The By-Products of Coke Making.* [A paper read before the American Iron & Steel Inst. A review of the industry and description of methods in which it is shown that the industry is on the increase].—I. Tr. Rev. June 15 1916; p 3½*; 25c.

Cobb, John.—*Refractory Materials and Salty Coal.* [A paper read before the Coke Oven Managers' Assn. Speaks of test work, showing the effect of salts contained in coal on the refractory lining of coke ovens].—Coll'y Guard. Mar. 31 1916; p 605; pp 1½. I. & C. Tr. Rev. Mar. 31; p 374; pp 1½; 35c.

Coulthard, R. W.—*Evaluating Coal Properties in Western Canada.* [A paper read at the International Engineering Congress meeting].—Canadian Mg. Jnl. Jan. 1 1916; p 21; pp 3; 35c.

Donath, Ed.—*Die Unterscheidung der Mineralkohlen vom Technischen und Bergrechtlichen Standpunkte.* [The dis-

crimination of mineral carbons from a practical and technical standpoint].—Montan. Rund. Jan. 1 1916; p 1; pp 6; 35c.

Donath, E.—*Die Unterscheidung der Mineralkohlen vom Technischen und Bergrechtlichen Standpunkte.* [A discussion on coal from a technical and mining standpoint].—Montanist. Rund. Jan. 16 1916; p 32; pp 5; 35c.

Fearing, F. C.—*Relative Costs of Coal and Oil Fuels.* [In full from Power. A general comparison of the two, with figures on the cost of each].—E. & M. J. Mar. 25 1916; p 555; pp 1¾*; 25c.

Fearnsides, W. G.—*Some Effects of Earth Movement on the Coal Measures of the Sheffield District.* [A paper read before the Midland Inst. of Mining, Civil and Mechanical Eng.].—I. & C. Tr. Rev. June 2 1916; p 630; pp 2*; 35c; Coll'y Guard. June 2; p 1039; pp 1½*; June 9; p 1088; pp 2*; 70c.

Grady, W. H.—*Selecting and Buying Fuel.* [Charts, tables, description and discussion having to do with the selection of any class of fuel so as to get a minimum cost per ton. Heat value of the fuel and situation of the product with respect to the user are the main points].—Amer. Wood Preservers' Assn. 1916 Report; p 91; pp 14*; 35c.

Greer, G. E.—*An Underground Mine Stable.* [Detailed drawings, description and discussion on this type of concrete stable are given].—Coal Age June 10 1916; p 998; pp 1¾*; 20c.

Lohman, K. B.—*The Park Development Problems in the Hard Coal Region.* [Treats on things which should determine the nature and design of a park of this kind and gives a proposed plan for one to be shortly adopted].—Coal Age May 27 1916; p 914; pp 3¾*; 20c.

Lomax, J.—*Micro-Chemical Examination of Coal in Relation to Its Utilization.* [From a paper read before the Manchester Geological and Mining Soc. The chemical properties as detected by the microscope are brought out, as also are the methods of preparing the slide].—Coll'y Guard. May 12 1916; p 909; pp 1; 35c.

Mann, Arthur S.—*Some Problems in Burning Powdered Coal.* [Abst. from the German Electric Review].—Steam Jan. 1916; p 3; pp 5*; 35c.

McCrystle, J. — *Underground Mine Roads.* [Details of methods for surveying for haulage ways in coal mines are given and a discussion on better plans for haulage ways in coal mines].—Coal Age *June 3 1916;* p 959; pp 5½; 20c.

Moore, Harold.—Fuel Oils from Coal. [A paper read before the Manchester Assn. of Eng., England].—I. & C. Tr. Rev. Mar. 3 1916; p 243; pp 1; 35c.

Paterson, J. H.—*Fuel Values.* [The value of various kinds of fuel to the consumer with regard to their heat and other contents. Includes coal, coke, etc.].—Jnl. of Soc. of Chem. Ind. Jan. 15 1916; p 10; pp 2½*; 60c.

Porter, H. C.; Ralston, O. C.—*Some Properties of the Water in Coal.* [Gives details of the results and methods used in the laboratory on this work].—U. S. Bur. of Mines; Tech. Paper 113; pp 30*; 15c.

Shurick, A. T.—*Business Aspects of the Coal Industry in* 1915. [Discusses the great revision of the trade channels and results which the war has produced in the market. Transportation is also considered].—Coal Age Jan. 8 1916; p 61; pp 3½; 20c.

Simons, W.—*Iron and Steel for Colliery Work.* [A paper read before the North Staffordshire Institute of Mining & Mechanical Eng.].—Coll'y Guard. Mar. 31 1916; p 606; pp 2. I. & C. Tr. Rev. Mar. 31 1916; p 362; pp 2; 35c.

Veazey, V. S.—*Table for Computing the Mine Yardage.* [Feet, yards, rate per yard and the total price amount are combined in this table].—Coal Age April 15 1916; p 668; pp 1; 20c.

Wagner, F. H.—*Coal-Gas Residuals and Their Applications.* [A paper read before the Franklin Inst. Contains a flow sheet showing the distillation of bituminous coal and the descriptive matter takes up the questions as noted on the flow sheet].—Met. & Chem. Engg. May 1 1916; p 493; pp 7½*; 30c.

Wagner, F. H.—*Coal and Coke.* [The first quarter of the book discusses bituminous coal and the last three-quarters is on methods used in coking].—McGraw-Hill; book; pp 431*; $4.

Winmill, T. F.—*The Absorption of Oxygen by Coal.* [A number of tests and analysis along this line are given].—Coll'y Guard. June 16 1916; p 1135; pp 3⅜; 35c.

Winmall, T. F.—*The Estimation of Moisture in Coal.* [A paper read before the Inst. of Mining Eng.].—I. & C. Tr. Rev. June 9 1916; p 671; pp 1*; 35c.

Winmill, T. F.—*The Absorption of Oxygen by Coal.* [A paper read before the Inst. of Mining Eng. The effect of size and percentage of oxygen in the air on the rate and quantity of oxygen absorbed by the coal is brought out].—I. & C. Tr. Rev. June 9 1916; p 660; pp 3; 35c.

——— *Administration Leasing Bill.* [Applies to coal, phosphate, oil, gas, and potassium and sodium saline deposits].—Mg. & Oil Bull. Jan. 1916; p 34; pp 3¾; 25c.

——— *The New York Market in* 1915. [A general review of the dull period during the first half of the year and the improvement during the last half].—Coal Age Jan. 8 1916; p 65; pp 2; 20c.

——— *The Philadelphia Anthracite Market During* 1915. [Describes the market for the year from a price and trade standpoint].—Coal Age Jan. 8 1916; p 79; pp 3; 20c.

Production

Brooks, A. H.—*Alaska Mining Development in* 1915. [Abst. of data from the U. S. G. S. on the production and progress in Alaska].—S. L. Mg. Rev. Feb. 15 1916; p 13; pp 4*; 25c.

Gray, F. W.—*Coal Production of Nova Scotia and the Effect of Recruiting.*—Canadian Mg. Jnl. Feb. 15 1916; p 91; pp 2; 35c.

Gray, F. W.—*Nova Scotia Coal Production During* 1915. [A preliminary estimate and talk on the subject].—Canadian Mg. Inst. Bull. Jan. 1916; p 10; pp 3; 35c.

Hice, R. R.—*The Mineral Production of Pennsylvania in* 1913. [Coal, coke, petroleum, natural gas, clay, mineral paints and stone are reviewed in general and by counties as regards their production].—Pa. Geol. Surv. Report 11; pp 108.

Hore, R. E.—*Mineral Resources of Michigan.* [Tables on the production and values of mineral products. Also a complete geological review of the copper deposits].—Mich. Geol. Surv. Lansing; Pub. 19, Ser. 16; pp 351*.

Jüngst, E.—*Deutschlands Gewinnung an Kohle und Eisen in den ersten beiden Kriegsmonaten.* [Abst. from Glückauf on the iron and coal production of Germany during the first part of the war].—Zts. Oberschles. Berg & Hütten-Vereins Dec. 1914; p 473; pp 4½; 50c.

McCaskey, H. D.—*Mineral Production of the United States in* 1914. The subject is taken up separately by the minerals and collectively by production of the U. S.].—Min. Res. of U. S. I:A; pp. 69.

McLeish, John.—*Annual Report on the Mineral Production of Canada,* 1914. [Each mineral is reported on separately. The imports, exports, production and condition of the trade are given].—Canada Dept. of Mines, Mines Branch, No. 384; pp 362.

McLeish, John.—*Preliminary Report of the Mineral Production of Canada in* 1915. [The principal minerals are lead, zinc, copper, silver, gold, nickel, asbestos, coal and iron].—Canada Dept. of Mines, Mines Branch Report 408; pp 28.

Petrascheck, W.—*Die Kohlenversorgung des Balkans.* [On the coal production and industry of the Balkan states].—Montanist. Rund. Mar. 1 1916; p 117; pp 5; 35c.

Sharp, Alexander.—*Mining Conditions in British Columbia.* [Speaks of the conditions in general and includes figures on the production of coal and placer gold].—Mg. Engg. & Elect. Rec. Feb. 1916; p 1; pp 4½; 35c.

Shurick, A. T.—*Business Aspects of the Coal Industry in* 1915. [Discusses the great revision of the trade channels and results which the war has produced in the market. Transportation is also considered].—Coal Age Jan. 8 1916; p 61; pp 3½; 20c.

Shurick, A. T.—*The Foreign Coal Fields.* [Deals with the coal production and conditions of the industry in various countries].—Coal Age April 29 1916; p 749; pp 4; 20c.

——— *Aus dem Jahrsbericht des Vereins für die Gergbaulichen Interessen im Oberbergamtsbezirk Dortmund für das Jahr* 1913. [From the state report on the operation and production of the iron and coal mines in Germany in 1913].—Zts. Oberschles. Berg & Hütten-Vereins July 1914; p 290; pp 20; 50c.

——— *Bericht des Vortandes des Oberschleischen Berg-und Hüttenmännischen Vereins über die Wirksamkeit des Vereins über die Wirksamkeit des Vereins im Jahre* 1913-14. [A state report on the operation and production of the mines and smelters of upper Silesia, which is mostly iron and coal land].—Zts. Oberschles. Berg & Hütten-Vereins July 1914; p 281; pp 9; 50c.

——— *Der Bergbau des Königreichs Sachsen im Jahre* 1914. [Production and operation of the mines in Saxony during 1914].—Glückauf Jan. 22 1916; p 71; pp 5; 50c.

——— *Production of American Mines Reaches Highest Point in* 1915. [Copper, iron and zinc show the largest gain].—Mg. Cong. Jnl. Jan. 1916; p 9; pp 2; 25c.

——— *Production of Coal and Coke in Canada in* 1914. [Mostly on coal, with the discussion divided into provinces].—Canada Dept. of Mines, Report 348; pp 39.

——— *Report of the Department of Mines, Pennsylvania.* [Gives the steps

taken towards safety and sanitation and preventing accidents, with an account of those which occurred. Tables on the production of the various coal mines are given and show the collective production of the districts and state..—Dept. of Mines, Pa., 1914; pp 614.

——— *Report of the Department of Mines, Pennsylvania,* 1914, *Part II.* [On the bituminous fields. Most of the information is in tabulated rather than descriptive form].—Pa. Dept. of Mines, Report 1914; pp 1057.

——— *Reviews of Coal Mining in* 1915. [Reviews by different authors for the producing states, giving production and general conditions of the industry therein. The transportation question is dealt with some, as is the question of accidents and safety].—Coal Age Jan. 8 1916; p 38; pp 21; 20c.

——— *The Coal Industry of the United States in* 1915. [Takes up the situation in general and separately for the producing states].—Mg. World Feb. 5 1916; p 274; pp 2¾*; 10c.

——— *Uebersicht über den Oberschlesischen Steinkohlen, Brikett und Koks-Versand nach den einzeinen Stationen des in und Auslandes.* [Gives the production, imports and exports of coal, coke and briquettes in upper Silesia and other states of Germany. It is arranged in table form].—Zts. Oberschles. Berg & Hütten-Vereins Sept. 1914; p 344; pp 16; 50c.

By-Products

Barber, C.—*Coking, the Recovery and Working Up of By-Products.* [A paper read before the Sheffield Univ. Gas & Coke Oven Students' Assn.].—I. & C. Tr. Rev. April 21 1916; p 457; pp 2*; April 28; p 483; pp 2⅓*; May 5 1916; p 518; pp 2¾*; $1.05.

Burrell, G. A.; Biddison, P. M.; Oberfell, G. G.—*The Extraction of Gasoline from Natural Gas by Absorption Methods.* [A paper read before the National Gas Assn. of America].—Met. & Chem. Engg. June 1 1916; p 651; pp 1½; 30c.

Childs, W. H.—*The By-Products of Coke Making.* [A paper read before the American Iron & Steel Inst. A complete and authoritative report of the industry as it is today].—I. Tr. Rev. June 1 1916; p 1215; pp 3¼; June 15 1916; p 3½*; 50c.

Christopher, J. E.—*Coal Distillation, Gasification and By-Products.* [A series of articles which appeared in the Science and Art of Mining. The subjects of gas producers, coal distillation and by-products, coke, and by-products from the blast furnace are considered].—Thomas Wall & Sons, Wigan, England; pp 90*; book; 75c.

Clarke, T. C.—*Status of American By-Product Coke.* [A paper read before the Society of Chem. Industry on the growth of the industry and obstacles encountered and other items regarding the by-products, etc.].—Iron Age May 4 1916; p 1080; pp 2; 30c. I. Tr. Rev. May 4; p 979; pp 2½*; 25c.

Clarke, T. C.—*The Present Status of the American By-Product Coke Oven Industry.* [Treats on costs and general discussion].—Met. & Chem. Engg. May 15 1916; p 601; pp 2¼; 30c.

Coleman, F. C.—*By-Product Coking Installation in Great Britain.* [A recent 160,000-ton plant giving gas, tar, sulphate of ammonia and benzol].—Coal Age Jan. 29 1916; p 201; pp 5½*; 20c.

Dearle, G.—*Power from Coke Oven Gas.* [A paper read before the Yorkshire section of the Inst. of Elect. Eng. A very complete description is given on a combustion engine using this kind of gas. Lubrication, starting the engine, purifying the gas, gas composition and consumption and many other items of interest are given].—Coll'y Guard. May 12 1916; p 895; pp 2*; 35c.

Hoskin, A. J.—*Distillation of Colorado Lignite.* [Describes a plant at Denver Colo, where briquettes, gas, oils and other by-products are made from lignite found in the state]—Coal Age April 15 1916; p 665; pp 2¾*; 20c.

Jordan, H. W.—*The Development in the United States of the Manufacture of Products Derived from Coal.* [Abst. from the American Chem. Eng. Bull.].—Met. & Chem. Engg. Feb. 1 1916; p 144; pp 3; 30c.

Luty, B. E. V.—*Connellsville and By-Product Coke Industries in* 1915. [An acceptance of by-product coke in iron establishments has placed this product in advance of the other grade].—Coal Age Jan. 8 1916; p 83; pp 1; 20c.

Malcolmson, C. T.—*The Coal-Briquetting Industry.* [Advance was made in the briquetting of fine anthracite and plant improvements were principally in the west and northwest].—Coal Age Jan. 8 1916; p 86; pp 1¼; 20c.

Rittman, W. F.; Dutton, C. B.; Dean, E. W.; Howard, M. S.—*Manufacture of Gasoline and Benzene-Toluene from Petroleum and Other Hydrocarbons.*—U. S. Bur. of Mines Bull. 114; pp 268*.

Wagner, F. H.—*Coal-Gas Residuals and Their Applications.* [A paper read

before the Franklin Inst. Contains a flow sheet showing the distillation of bituminous coal and the descriptive matter takes up the questions as noted on the flow sheet].—Met. & Chem. Engg. May 1 1916; p 493; pp 7½*; 30c.

——— *By-Product Coke Ovens.* [A description with drawings of various types made].—I. & C. Tr. Rev. April 7 1916; p 393; pp 3*; 35c.

—— *Coal Tar and Its Products.* [A review of coal tar and its products with a diagrammatic table showing the derivatives to be had from it].—E. & M. J. Jan. 1 1916; p 7; pp 1¾*; 25c.

——— *Hall Process of Cracking Oils.* [An illustrated description of the invention, method and apparatus].—Petro. World June 1916; p 265; pp 2¼*; 35c.

——— *Making By-Product Coke for the Market.* [A general current review of plants for manufacturing the same].—I. Tr. Rev. Jan. 13 1916; p 129; pp 3*; 25c.

——— *Society of Chemical Industry.* [New York meeting April 21. Papers on the "Application of Centrifugal Forces to Suspensions and Emulsions" and "The American By-Product Coke Oven Industry" are reproduced].—Met. & Chem. Engg. May 1 1916; p 500; pp 4½; 30c.

COAL BRIQUETTING

See under Mill and Milling.

COKE

Barber, C.—*Coking, the Recovery and Working Up of By-Products.* [A paper read before the Sheffield Univ. Gas. & Coke Oven Students' Assn.].—I. & C. Tr. Rev. April 21 1916; p 457; pp 2*; April 28; p 483; pp 2⅓*; May 5 1916; p 518; pp 2¾*; $1.05.

Burman, B. F.—*Coal and Coke Efficiency in Blast Furnace Operations.* [A number of tables and accompanying description is given with regard to the efficient use of the fuel].—Met. & Chem. Engg. Feb. 1 1916; p 137; pp 3; Mar. 1 1916; p 256; pp 2¾; 60c.

Campbell, J. R.—*Sulphur Elimination in Coking Process.* [A paper read before the A. I. M. E. explaining aeration and watering in beehive and by-product coking, accompanied with the chemical reactions involved].—Iron Age Feb. 10 1916; p 374; pp 1⅛; 30c.

Childs, W. H.—*The By-Products of Coke Making—I.* [A paper read before the American Iron & Steel Inst. A complete and authoritative report of the industry as it is today].—I. Tr. Rev. June 1 1916; p 1215; pp 3¼; 25c.

Clarke, T. C.—*Status of American By-Product Coke.* [A paper read before the Society of Chem. Industry on the growth of the industry and obstacles encountered and other items regarding the by-products, etc.]—Iron Age May 4 1916; p 1080; pp 2; 30c. I. Tr. Rev. May 4 1916; p 979; pp 2½*; 25c.

Clarke, T. C.—*The Present Status of the American By-Product Coke Oven Industry.* [Treats on costs and general discussion].—Met. & Chem. Engg. May 15 1916; p 601; pp 2¼; 30c.

Cobb, John.—*Refractory Materials and Salty Coal.* [A paper read before the Coke Oven Managers' Assn. Speaks of test work, showing the effect of salts contained in coal on the refractory lining of coke ovens].—Coll'y Guard. Mar. 31 1916; p 605; pp 1½. I. & C. Tr. Rev. Mar. 31; p 374; pp 1½; 35c.

Coleman, F. C.—*By-Product Coking Installation in Great Britain.* [A recent 160,000-ton plant giving gas, tar, sulphate of ammonia and benzol].—Coal Age Jan. 29 1916; p 201; pp 5½*; 20c.

Dearle, G.—*Power from Coke Oven Gas.* [A paper read before the Yorkshire section of the Inst. of Elect. Eng. A very complete description is given on a combustion engine using this kind of gas. Lubrication, starting the engine, purifying the gas, gas composition and consumption and many other items of interest are given].—Coll'y Guard. May 12 1916; p 895; pp 2*; 35c.

Estep, H. C.—*How Steel Is Made in Alabama.* [Gives a complete description of the Gulf States Co.'s plant and describes its operation and products used and produced].—I. Tr. Rev. May 18 1916; p 1091; pp 8⅓*; 25c.

Gosrow, R. C.—*Coke as a Reducing Agent in the Electric Smelting Furnace.* [Details of operation for this practice is given with discussion on the advantages and disadvantages].—Met. & Chem. Engg. June 15 1916; p 691; pp 3; 30c.

Hice, R. R.—*The Mineral Production of Pennsylvania in* 1913. [Coal, coke, petroleum, natural gas, clay, mineral paints and stone are reviewed in general and by counties as regards their production].—Pa. Geol. Surv. Report 11; pp 108.

Howland, H. P.—*Is "Gruner's Ideal" Now Tenable?* [A paper read before the A. I. M. E. The law is in regard to the combustion of coke and other carbons in the blast furnace].—I. Tr. Rev. Mar. 16 1916; p 593; pp 7½; 25c.

Johnson, J. E., Jr.—*The Distribution of the Charge Column and the Ascending Gas Column.* [Details are given and the information is on the correct methods of charging and distributing both the fuel and ore. Considerable discussion is had about points which may tend to affect the distribution].—Met. & Chem. Engg. June 1 1916; p 642; pp 9*; 30c.

Lister, J. E.—*Modern Coal and Coke Handling Machinery.* [A paper read before the Soc. of Engineers, England].—Coll'y Guard. April 7 1916; p 649; pp 1⅓*; 35c.

Luty, B. E. V.—*Connellsville and By-Product Coke Industries in* 1915. [An acceptance of by-product coke in iron establishments has placed this product in advance of the other grade].—Coal Age Jan. 8 1916; p 83; pp 1; 20c.

McLeish, John.—*Preliminary Report on the Mineral Production of Canada.* [Abst. from a report by the Division of Mineral Resources of Canada. Copper, lead, zinc, asbestos, coal and coke are considered].—Mg. World April 22 1916; p 781; pp 1½; 10c.

Paterson, J. H.—*Fuel Values.* [The value of various kinds of fuel to the consumer with regard to their heat and other contents. Includes coal, coke, etc.].—Jnl. of Soc. of Chem. Ind. Jan. 15 1916; p 10; pp 2½*; 60c.

Seaver, K.—*Making Silica Brick for By-Product Coke Ovens.* [A paper read before the A. I. M. E.].—B. & C. Rec. Feb. 1 1916; p 235; pp 3*; Feb. 15 1916; p 341; pp 2½; 70c. Chem. Eng. Jan. 1916; p 13; pp 2; 35c.

Thaler, H. — *Experimentelle Untersuchung des Siegerländer Spiegeleisenhochofens.* [Successful experimental work with coke ovens producing spiegel-iron].—Berg & Hütten. Rund. Mar. 5 1916; p 33; pp 5½; 35c.

Wagner, F. H.—*Coal and Coke.* [The first quarter of the book discusses bituminous coal and the last three-quarters is on methods used in coking].—McGraw-Hill; book; pp 431*; $4.

Wagner, F. H.—*Coal-Gas Residuals and Their Applications.* [A paper read before the Franklin Inst. Contains a flow sheet showing the distillation of bituminous coal and the descriptive matter takes up the questions as noted on the flow sheet].—Met. & Chem. Engg. May 1 1916; p 493; pp 7½*; 30c.

——— *By-Product Coke Ovens.* [A description with drawings of various types made].—I. & C. Tr. Rev. April 7 1916; p 393; pp 3*; 35c.

——— *Electricity in By-Product Coke Manufacture.* [A description of the making of illuminating gas and methods of utilizing waste gas for generating electricity to be used in by-product coking].—Elect. Rev. & West. Elect. April 1 1916; p 583; pp 3*; 25c.

——— *Making By-Product Coke for the Market.* [A general current view of plants for manufacturing the same].—I. Tr. Rev. Jan. 13 1916; p 129; pp 3*; 25c.

——— *New Coke Ovens at Port Clarence Works.* [In detail gives the plant arrangement and operation of Bell Bros., Ltd., plant at Middlebrough, England].—I. & C. Tr. Rev. May 26 1916; p 606; pp 2*; 35c.

——— *Production of Coal and Coke in Canada in* 1914. [Mostly on coal, with the discussion divided into provinces].—Canada Dept. of Mines Report 348; pp 39.

——— *Production of Coke and Briquettes in the United Kingdom in* 1914.—I. & C. Tr. Rev. Jan. 7 1916; p 1; pp ⅔; 35c.

——— *Society of Chemical Industry.* [New York meeting April 21. Papers on the "Application of Centrifugal Forces to Suspensions and Emulsions" and "The American By-Product Coke Oven Industry" are reproduced].—Met. & Chem. Engg. May 1 1916; p 500; pp 4½; 30c.

——— *Uebersicht über den Oberschlesischen Steinkohlen, Brikett und Koks-Versand nach den einzelnen Stationen des in und Auslandes.* [Gives the production, imports and exports of coal, coke and briquettes in upper Silesia and other states of Germany. It is arranged in table form].—Zts. Oberschles. Berg & Hütten-Vereins Sept. 1914; p 344; pp 16; 50c.

PEAT

Babcock, E. J.—*Economic Methods of Utilizing Western Lignites.* [Several uses of the fuel are given, including its use directly as fuel and for making gas. Experimental work is also dealt with].—U. S. Bur. of Mines; Bull. 89; pp 73*.

Galdi, B.—*I Giacimenti di Lignite dei Dintorni di Sogliano al Rubicone, Romagna.* [Lignite deposits in Italy].—Ind. Chim. Min. & Met. Feb. 25 1916; p 51; pp 2¼; 35c.

Haanel, B. F.—*The Value of Peat Fuel for Power.* [Compares peat as a fuel with coal, bringing out factors in regard to their respective costs and efficiency].—Jnl. American Peat Soc. April 1916; p 47; pp 15*; $1.60.

Hoskins, A. J.—*Distillation of Colorado Lignite.* [Describes a plant at Denver, Colo., where briquettes, gas, oils and other by-products are made from lignite found in the state].—Coal Age April 15 1916; p 665; pp 2¾*; 20c.

Morgan, P. G.; Bartrum, J. A.—*The Geology and Mineral Resources of the Buller-Mokihinui Subdivision, Westport Division, New Zealand.*—N. Z. Geol. Surv., Wellington; Bull. No. 17; pp 210*; 75c.

Soper, E. K.—*The Peat Deposits of Minnesota.* [A description of the nature of the different peat deposits in all parts of the state].—Jnl. American Peat Soc. April 1916; p 81; pp 8; $1.60.

Turina, I.—*Die Braunkohlenablagerungen von Livno-Podkraj und Zupanjac.* [On the lignite deposits of Livno-Podkraj, Germany].—Montanist Rund. Mar. 16 1916; p 159; pp 3; 35c.

MISCELLANEOUS FUELS

Austin, L. S.—*The Washoe Reduction Works, Anaconda, Montana.* [The concentrator is described and in connection with the description of the smelter, coal-dust burners used are described].—M. & S. P. Feb. 5 1916; p 195; pp 8¾*; 20c.

Bone, W. A.—*Fuel Economy.* [Treats on the world's resources and points out where conservation might be practiced].—Jnl. Soc. Chem. Ind. April 15 1916; p 389; pp 8; 60c.

Bone, W. A.—*The National Importance of Fuel Economy.* [A talk on the subject from the view of conservation of resources].—Trans. English Ceramic Soc. Vol. XV; p 41; pp 14; 65c.

Diehl, A. H.—*Modern Methods of Burning Blast-Furnace Gas in Stoves and Boilers.* [A paper read before the American Iron & Steel Inst.].—I. & C. Tr. Rev. Jan. 21 1916; p 66; pp 2*; Jan. 28 1916; p 89; pp 1*; 70c.

Dunn, F. B.—*Industrial Uses of Fuel Oils.* [Describes methods employed and tests to be made for insuring efficient results. Oil fuel in the clay, cement, steel and metallurgical plants are discussed under separate chapters].—Technical Pub. Co., San Francisco; book; pp 235*; $3.

Grady, W. H.—*Selecting and Buying Fuel.* [Charts, tables, description and discussion having to do with the selection of any class of fuel so as to get a minimum cost per ton. Heat value of the fuel and situation of the product with respect to the user are the main points].—Amer. Wood Preservers' Assn. 1916 report; p 91; pp 14*; 35c.

Hallett, R. L.—*Analysis of Fuel Gas.* [Use is made of the electrical explosion pipette].—E. & M. J. April 29 1916; p 779; pp 1¾*; 25c.

Huessener, K.—*Modern Development in the Combustion of Blast-Furnace Gas with Special Reference to the Bradshaw Gas Burner.* [History and description of the burner are given and accompanied with charts showing results of successive operations].—A. I. M. E. Bull. Feb. 1916; p 443; pp 32*; 35c. I. & C. Tr. Rev. Mar. 3 1916; p 240; pp 2*; Mar. 10 1916; p 272; pp 1; 70c.

Kuzell, C. R.—*Coal-Dust Firing in Reverberatory Furnaces.* [A paper read before the Pan-American Scientific Cong. Preparation of the coal, etc., with particular reference to the Anaconda plant, Mont., is described].—E. & M. J. Feb. 12 1916; p 302; pp 4*; 25c.

Labbe, Charles.—*The Diesel Engine.* [General with detailed figures on operation, construction, comparison with other power fuel consumption, power developed per quantity of fuel, etc.].—Mex. Mg. Jnl. May 1916; p 165; pp 3*; 35c.

Lesher, C. E.—*Fuel Briquetting in* 1915. [Little difference was shown from 1914. The industry is still in its infancy].—Min. Res. of U. S. II:1; pp 6.

Liddell, D. M.—*Metallurgists' and Chemists' Handbook.* [Contains data, prices, production, methods of assay, analysis, cyanidation, ore-dressing, and information on fuels, refractories, design and construction, etc.].—McGraw-Hill; book; pp 603*; $4.

Mann, Arthur S.—*Some Problems in Burning Powdered Coal.* [Abst. from the General Electric Review].—Steam Jan. 1916; p 3; pp 5*; 35c.

Megson, J. E.; Jones, H. S.—*The Diesel Engine in Practice.* [Costs of operating and descriptions of construction are given, including engines direct connected and otherwise with electric generators].—Jnl. Elect., Power & Gas Feb. 19 1916; p 148; pp 3*; Feb. 26; p 173; pp 2*; Mar. 4; p 190; pp 2; $1.05.

Miller, B. L.; Singewald, J. T.—*Substitutes for Coal in the Andes, South America.* [Vegetation, peat and turf are the principal fuels used here].—Coal Age June 17 1916; p 1040; pp 4*; 20c.

Moore, Harold.—*Fuel Oils from Coal.* [A paper read before the Manchester Assn. of Eng., England].—I. & C. Tr. Rev. Mar. 3 1916; p 243; pp 1; 35c.

Paterson, J. H.—*Fuel Values.* [The

value of various kinds of fuel to the consumer with regard to their heat and other contents. Includes coal, coke, etc.].—Jnl. of Soc. of Chem. Ind. Jan. 15 1916; p 10; pp 2½*; 60c. I. & C. Tr. Rev. Feb. 11 1916; p 150; pp 1*; 35c.

Selwyn-Brown, Arthur. — *Fuel Oil from Shale.* [On the production, distribution and qualities of oils from different localities].—Engg. Mag. Mar. 1916; p 913; pp 8; 35c.

Symons, S. W.—*Using Corliss Engines with Fuel at 40c Per Ton.* [Cross-compound Corliss-engine with air compressor shows saving over straight-line compressors].—Coal Age April 1 1916; p 566; pp 1*; 20c.

——— *Efficient Operation of the Boiler Rooms.* [A talk on feed-water, fuel and the maintenance of clean boilers].—Pract. Eng. May 15 1916; p 447; pp 1½*; 20c.

——— *Metal Statistics,* 1916. [A compilation of tables on production and prices of all the various metals and fuels].—Amer. Metal Market; book; pp 868; 50c.

——— *Powdered Coal Utilization at Lebanon, Pa.* [Waste-heat boilers are used in conjunction with open-hearth furnaces by the American Iron & Steel Mfg. Co. Details and drawings of their coal crushing plant are given].—Iron Age June 1 1916; p 1317; pp 2¼*; 30c.

——— *Rules for Conducting Performance Tests of Power Plant Apparatus.* [Gives methods of procedure and kinds of apparatus to be used in testing steam and combustion engine power plants].—A. I. Mech. E.; Report; pp 215*; 35c.

CHAPTER X.

PETROLEUM, NATURAL GAS, ETC.

PETROLEUM

Arnold, Ralph.—*Conservation of the Oil and Gas Resources of the Americas.* [The occurrence and production from all the fields is discussed, with their reserves, so as to bring out the subject of conservation. Qualities of the various products are also given].—Eco. Geol. May 1916; pp 203; pp 20; 60c.

Arnold, Ralph.—*Petroleum Resources of U. S.* [A separate brief on the oil producing fields in U. S.].—Cal. Derrick Mar. 1916; p 6; pp 1½; 30c.

Ball, L. C.—*Lowmead No. 1 Bore and the Tertiary Oil-Shales of Baffle Creek, Australia.* [Abst. from a report of the Australian Geol. Surv.].—Queen. Govt. Mg. Jnl. Jan. 15 1916; p 13; pp 3¾*; 35c.

Bradley, W. W.; Brown, C. G.; Lowell, F. L.; McLaughlin, R. P.—*Mines and Mineral Resources of Fresno, Kern, Kings, Madera, Mariposa, Merced, San Joaquin and Stanislaus Counties, California.* [Is divided into counties under which the various properties and prospects therein are separately described].—State Geol. Surv. Report 14456—EE; pp 220*.

Brooks, B. T.—*The Cracking and Distillation of Petroleum Under Pressure.* [A paper read to the section of Physics and Chemistry, Franklin Inst.].—Chem. Eng. Feb. 1916; p 76; pp 7½*; 35c.

Butts, Charles.—*Structure of the Southern Part of Cumberland County, Tennessee, in Relation to the Possible Occurrence of Oil and Gas.* [Includes a description of the formation and topography of the country].—Resources of Tenn. April 1916; p 107; pp 4*.

Clapp, F. G.—*Petroleum and Natural Gas Resources of Canada.* [Abst. from a 886 page Bull. of the Mines Branch. Speaks of the deposits in the several provinces and gives figures on their production].—Mg., Engg. & Elect. Rec. Feb. 1916; p 12; pp 1½; 35c.

Condit, D. D.—*Structure of the Berea Oil Sand in the Summerfield Quadrangle.* [These are among the most important producing sands of U. S. Their geology and quality of the product are described], U. S. G. S. Bull. 621-N; pp 15.

Condit, D. D.—*Structure of the Berea Oil Sand in the Woodsfield Quadrangle.* [This includes Belmont, Monroe, Noble and Guernsey counties in Ohio].—U. S. G. S. Bull. 621-O; pp 17*.

Craig, E. H. C.—*Relation of Shale Oil to Petroleum.* [Abst. from a paper read before the Inst. of Petroleum Technologists].—Petro. World May 1916; p 216; pp 1½; 35c.

Doheny, E. L.—*The Mexican Petroleum Co., Ltd.* [A description of the company, its development, operations, etc.].—Mg. & Oil Bull. May 1916; p 130; pp 5*; 25c.

Dunn, F. B.—*Industrial Uses of Fuel Oil.*—Tech. Pub. Co.; book; pp 235; $3.

Egloff, G.; Twomey, T. J.—*The Effect of Temperature on the Formation of Olefins from Petroleum at Atmospheric Pressure.* [Reviews experimental work, etc., on the subject].—Met. & Chem. Eng. Mar. 1 1916; p 247; pp 4*; 25c.

English, W. A.—*Geology and Oil Prospects of Cuyama Valley, California.* [Describes the geology of the district and structure of the formation].—U. S. G. S. Bull, 621-M; pp 25*.

Fearing, F. C.—*Relative Costs of Coal and Oil Fuels.* [In full from Power. A general comparison of the two with figures on the cost of each].—E. & M. J. Mar. 25 1916; p 555; pp 1¾*; 25c.

Grady, W. H.—*Selecting and Buying Fuel.* [Charts, tables, description and discussion having to do with the selection of any class of fuel so as to get a minimum cost per ton. Heat value of the fuel and situation of the product with respect to the user are the main points].—Amer. Wood Preservers' Assn. 1916 Report; p 91; pp 14*; 35c.

Hager, Dorsey.—*Valuation of Oil Properties.* [Specific data, curves and description are given on the topic].—E. & M. J. May 27 1916; p 930; pp 1½*; 25c.

Heggem, A. G.—*Petroleum Producing.* [A general talk and description of items of interest in the operating end of the petroleum industry].—Sibley Jnl. Engg. May 1916; p 251; pp 4; 30c.

Heggem, A. G.—*The Control of Petroleum and Natural Gas Wells.* [On drilling and piping a well].—A. I. M. E. Bull. Jan. 1916; p 151; pp 13*; 35c.

Hice, R. R.—*Oil and Gas Map of Southwestern Pennsylvania.* [A large map is given and accompanied with description of the wells in the district being considered, which includes figures on

the production of the district and separate wells].—Pa. Geol. Surv. pp 22*.

Hice, R. R.—*The Mineral Production of Pennsylvania in* 1913. [Coal, coke, petroleum, natural gas, clay, mineral paints and stone are reviewed in general and by counties as regards their production].—Pa. Geol. Surv. Report 11; pp 108.

Holiday, F. A.—*Uralsk Province, Russia, and Its Oil Fields.* [A description of the country, the wells, refineries, production, etc. [Petro. World Jan. 1916; p 9; pp 4*; 35c.

Hutchins, J. P.—*Mining in the Russian Empire,* 1915. [Deals with dredging operations; the production of gold, platinum, petroleum, etc.; and labor conditions].—E. & M. J. Jan. 8 1916; p 124; pp 2½; 25c.

Ireland, J. B.—*Oil Shale Industry Planned for Utah.* [Speaks of several methods for refininig the material and also discusses costs].—S. L. Mg. Rev. Mar. 30 1916; p 14; pp 1¾*; 25c.

Jamieson, C. E.—*Wyoming Oil and Coal Developments in* 1915.—S. L. Mg. Rev. Jan. 30 1916; p 1; pp 2*; 25c.

Johnson, R. H.—*Legal and Economic Aspects of the Conservation of Oil and Gas.* [A general discussion on the subject].—Nat. Gas. Feb. 1916; p 70; pp 3; 35c.

Kay, F. H.—*Petroleum in Illinois in* 1914 *and* 1915. [Deals with boring operations and production].—Illinois Geol. Surv. Bull. No. 33; pp 25.

Liwehr, A. E.—*Die Erdölförderung aus Bohrlöchern.* [On drilling for oil and gas in Germany and nearby fields].—Zts. Zentral Verbd. Bergbau Betriebsl. Feb. 15 1916; p 45; pp 5½*; Mar. 1; p 61; pp 6¾*; Mar. 15 1916; p 77; pp 6*; $1.05.

Lombardi, M. E.—*Valuation of Oil Lands and Properties.* [A paper read before the International Engineering Congress].—Oil Age Oct. 1916; p 7; pp 5¾; 35c.

Lupton, C. T.—*Oil and Gas Near Basin, Big Horn County, Wyoming.* [A compilation of geological data from which may be ascertained the probabilities of oil in some certain vicinity].—U. S. G. S. Bull. 621—L; pp 34*.

Malcolm, Wyatt.—*The Oil and Gas Fields of Ontario and Quebec.* [Treats on the general geology of the provinces and the deposits in detail by the various counties in which they lay].—Canada Geol. Surv. Memoir 81; pp 248.

Marstrander, R.—*The Mineral Resources of Uruguay, South America.* [The country has been exploited but little. Iron-manganese ore is of greatest importance, though gold and copper are found and there is possibility for lead, silver, coal and petroleum].—Mg. Mag. June 1916; p 315; pp 6*; 50c.

Matson, G. C.—*The Caddo Oil and Gas Field, Louisiana and Texas.* [A general geological description of the formation and its structure with short, separate descriptions of the different formations found there].—U. S. G. S. Bull. 619; pp 62*; 40c.

McLaughlin, R. P.—*Protecting Oil Fields from Infiltrating Water.* [A practical rather than theoretical explanation].—Cal. Derrick Feb. 1916; p 3; pp 3*; 35c.

Mercer, J. W.—*Mining in Ecuador.* [A paper read before the Pan-American Scientific Soc. The geology and gold mines are spoken of besides a review of the available water power and sanitation in the camps].—E. & M. J. Feb. 19 1916; p 243; pp 3¾; 25c.

Noth, Julius.—*Verbreitung der Erdölzone in den Karpathenländern und die Zukunft der Erdölgewinnung in denselben nach dem Gegenwärtigen Kriege.* [On the geology of the Carpathian oil fields].—Zts. Internat. Vereines Bohringenieure Feb. 15 1916; p 31; pp 3¼*; Mar. 1; p 45; pp 2½*; 70c.

Pratt, W. E.—*The Occurrence of Petroleum in the Philippines.* [Speaks of several occurrences of petroleum and describes the stratigraphy. Analyses of the oils are given].—Eco. Geol. May 1916; p 246; pp 20*; 60c.

Purdue, A. H.—*Oil and Gas Conditions in the Central Basin of Tennessee..* [On the structural and general geology of the field].—Resources of Tenn., State Geol. Surv. Jan. 1916; p 3; pp 16.

Purdue, A. H.—*Oil and Gas Conditions in the Reelfoot Lake District of Tennessee.* [Structural geology and character of the products found].—Resources of Tenn., State Geol. Surv. Jan. 1916; p 17; pp 20.

Reger, D. B.—*Detailed Report on Lewis and Gilmer Counties, West Virginia.* [Maps accompany the report. Coal, gas and oil are included in this area].—State Geol. Surv., Morgantown, W. Va.; book; pp 660*; $2.

Rittman, W. F.; Dutton, C. B.; Dean, E. W.; Howard, M. S.—*Manufacture of Gasoline and Benzine-Toluene from Petroleum and Other Hydrocarbons.*—U. S. Bur. of Mines Bull. 114; pp 268*.

Savage, T. E.—*Geologic Structure of Canton and Avon Quadrangles, Illinois.* [A general account of the structural geol-

ogy].—Illinois Geol. Surv. Bull. No. 33; p 27; pp 10*.

Savill, C. A.; Cox, A. W.—*On the Viscosity of Oils in the Redwood and Ostwald Viscometer.*—Jnl. Soc. Chem. Industry Feb. 15 1916; p 151; pp 2¼*; 50c.

Seaman, H. W.—*Wyoming's Immense Fuel Resources Assure Metallurgical Center.* [Talks of the recently opened natural gas and petroleum wells in that state].—Mg. World Mar. 4 1916; p 467; pp 5¼*; 10c.

Selwyn-Brown, A.—*Fuel Oil from Shale.* [Treats on the conservation of the product by obtaining oil from carbonaceous shales].—Engg. Mag. Mar. 1916; p 913; pp 8; 35c.

Shaw, E. W.; Matson, G. C.; Wegemann, C. H.—*Natural Gas Resources of Parts of North Texas.* [Areas about Fort Worth and Dallas, Tex., and southern and central Oklahoma fields are geologically described. Many topographic maps are shown].—U. S. G. S. Bull. 629; pp 129*.

Taylor, W. G.—*Motor Equipments for the Recovery of Petroleum.* [A detailed description of methods and practical results obtained by using the slip-ring motor for drilling, pumping, etc. Data covering horsepower required and kilowatt consumption is given].—Proc. Amr. Inst. Elect. Eng. June 1916; p 759; pp 14*; 35c.

Trumble, M. J.—*The Trumble Refining Process Described.* [A general description of the working features and a description of an installation at Martinez, California].—Petro. World Jan. 1916; p 17; pp 5*; 35c.

Velardez, Julio.—*El Petroleo del Comodoro Rivadavia.* [On the production and conditions of the industry in Peru and other parts of South America].—Inf. y Mem. Soc. Ing. Peru Dec. 1915; p 517; pp 8½; 75c.

Woodward, H. P.—*Reputed Petroliferous Area of the Warren River District, West Australia.*—W. Aust. Geol. Surv. Bull.; $1.

——— *Administration Leasing Bill.* [Applies to coal, phosphate, oil, gas, and potassium and sodium saline deposits].—Mg. & Oil Bull. Jan. 1916; p 34; pp 3¾; 25c.

——— *Conversaciones Sobre Contribucion Minera.* [Some contributions and talks on the mineral industry of South American countries. Copper, lead and petroleum are the principal things considered].—Inf. y Mem. Soc. Ing. Peru Dec. 1915; p 535; pp 26; 75c.

——— *Gasoline Question.* [A general discussion on the same and its production, as well as that of petroleum insofar as it bears on the gasoline market].—M. & S. P. May 20 1916; p. 753; pp 3¾*; 20c.

——— *Hall Process of Cracking Oils.* [An illustrated description of the invention, method and apparatus].—Petro. World June 1916; p 265; pp 2¼* 35c.

——— *Italy's Petroleum Resources.* [Rivanazzano Field is considered, with data on the present wells and prospects for further drilling].—Petro. World June 1916; p 275; pp 1; 35c.

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——— *The Petroleum Industry in the United States.* [Reviews the industry for 1915 by states and districts].—Mg. World Feb. 5 1916; p 270; pp 3*; 10c.

——— *United States Standard Tables for Petroleum Oils.* [Tabulated data giving physical properties of various oils under varying conditions].—U. S. Bur. Stand. Circular 57; pp 64.

——— *Year Book for* 1910 *of the Illinois Geological Survey.* [Includes the Administrative report and various economic geological papers].—Ill. Geol. Surv. Bull. 20; pp 165*.

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Gas Assn. of America].—Met. & Chem. Engg. June 1 1916; p 651; pp 1⅛; 30c.

Butts, Charles.—*Structure of the Southern Part of Cumberland County, Tennessee, in Relation to the Possible Occurrence of Oil and Gas.* [Includes a description of the formation and topography of the country].—Resources of Tenn. April 1916; p 107; pp 4*.

Clapp, F. G.—*Petroleum and Natural Gas Resources of Canada.* [Abst. from a 386 page Bull. of the Mines Branch. Speaks of the deposits in the several provinces and gives figures on their production].—Mg. Engg. & Elect. Rec. Feb. 1916; p 12; pp 1½; 35c.

Condit, D. D.—*Structure of the Berea Oil Sand in the Summerfield Quadrangle.* [These are among the most important producing sands of U. S. Their geology and quality of the product are described].—U. S. G. S. Bull. 621-N; pp 15*.

Cooper, A. S.—*Closed Pressure of Gas Wells.* [Describes an apparatus for testing to find the pressure in gas wells].—Cal. Derrick April 1916; p 3; pp 2*; 30c.

Doheny, E. L.—*The Mexican Petroleum Co., Ltd.* [A description of the company, its development, operations, etc.].—Mg. & Oil Bull. May 1916; p 130; pp 5*; 25c.

Earhart, R. F.; Wyer, S. S.—*Deviation of Natural Gas from Boyle's Law.*—Natural Gas June 1916; p 231; pp 11*; 35c.

Fisher, F. P.—*Establishing a Standard of Measurement for Natural Gas in Large Quantities.* [Natural gas for some time was paid for by simply a contract for the payment of a certain amount for gas to be used for a certain purpose. This article discusses measuring the gas with meters].—Paper American Soc. Mech. Eng.; pp 44*; 35c.

Grady, W. H.—*Selecting and Buying Fuel.* [Charts, tables, description and discussion having to do with the selection of any class of fuel so as to get a minimum cost per ton. Heat value of the fuel and situation of the product with respect to the user are the main points].—Amer. Wood Preservers' Assn. 1916 Report; p 91; pp 14*; 35c.

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Heggem, A. G.—*The Control of Petroleum and Natural Gas Wells.* [On drilling and piping a well].—A. I. M. E. Bull. Jan. 1916; p 151; pp 13*; 35c.

Hennen, R. V.; Gawthrop, R. M.—*Wyoming and McDowell Counties, West Virginia.* [Coal, sandstone, natural gas and petroleum are the principal resources. In three parts, history, physiography, geology and mineral resources are taken up in detail].—W. Va. Geol. Surv. 1915 report; pp 783*.

Hice, R. R.—*Oil and Gas Map of Southwestern Pennsylvania.* [A large map is given and accompanied with description of the wells in the district being considered, which includes figures on the production of the district and separate wells].—Pa. Geol. Surv. pp 22*.

Hice, R. R.—*The Mineral Production of Pennsylvania in* 1913. [Coal, coke, petroleum, natural gas, clay, mineral paints and stone are reviewed in general and by counties as regards their production].—Pa. Geol. Surv. Report 11; pp 108.

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Manning, V. H.—*The Conservation of Natural Gas.* [A paper read before the Natural Gas Assn.].—Natural Gas June 1916; p 225; pp 3½; 35c.

Matson, G. C.—*The Caddo Oil and Gas Field, Louisiana and Texas.* [A general geological description of the formation and its structure, with short, separate descriptions of the different formations found there].—U. S. G. S. Bull. 619; pp 62*; 40c.

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Purdue, A. H.—*Oil and Gas Conditions in the Reelfoot Lake District of Tennessee.* [Structural geology and character of the products found].—Resources of Tenn., State Geol. Surv. Jan. 1916; p 17; pp 20.

Purdue, A. H.—*Oil and Gas Conditions in the Central Basin of Tennessee.* [On the structural and general geology of the field].—Resources of Tenn., State Geol. Surv. Jan. 1916; p 3; pp 16.

Reger, D. B.—*Detailed Report on Lewis and Gilmer Counties, West Virginia.* [Maps accompany the report. Coal, gas and oil are included in this area].—State Geol. Surv., Morgantown, W. Va.; book; pp 660*; $2.

Sarchet, C. M.—*New Methods of Conservation.* [Treats on the subject from the viewpoint of efficient methods of drilling and operating].—Nat. Gas Feb. 1916; p 73; pp 1¼; 35c.

Seaman, H. W.—*Wyoming's Immense Fuel Resources Assure Metallurgical Center.* [Talks of the recently opened natural gas and petroleum wells in that state].—Mg. World Mar. 4 1916; p 467; 5¼*; 10c.

Shaw, E. W.; Matson, G. C.; Wegemann, C. H.—*Natural Gas Resources of Parts of North Texas.* [Made to ascertain the extent of the deposits, working and possibilities of new wells in the field 100 miles northwest of Fort Worth].—U. S. G. S. Bull. 629; pp 126*.

Wyer, S. E.—*Necessary Use and Effect of Gas Compressors on Natural Gas Field Operating Conditions.* [In a practical way the theory of operations is described].—A. I. M. E. Bull. Feb. 1916; p 281; pp 17*; 35c.

Wyer, S. S.—*Principles of Natural Gas Leaseholds Valuation.* [Considerable is given of the law restricting the same as well as information bearing on valuation].—Bull. A. I. M. E. April 1916; p 747; pp 14; 35c.

——— *Administration Leasing Bill.* [Applies to coal, phosphate, oil, gas, and potassium and sodium saline deposits].—Mg. & Oil Bull. Jan. 1916; p 34; pp 3¾; 25c.

——— *Natural Gas Association of America.* [A preliminary description of the Pittsburgh meeting].—Natural Gas May 1916; p 177; pp 2½; 50c.

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Butts, Charles.—*Geology and Mineral Resources of Jefferson County, Kentucky.* [The resources are low and consist principally of limestone, clay, gravel and a shale from which oil might but is not distilled].—Ky. Geol. Surv. IV; III; pp 270*.

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Selwyn-Brown, Arthur.—*Fuel Oil from Shale.* [On the production, distribution and qualities of oils from different localities].—Engg. Mag. Mar. 1916; p 913; pp 8; 35c.

Williams, M. Y.—*Arisaig-Antigonish District, Nova Scotia.* [A complete geological review of the district where copper, iron, oil-shale, gypsum and limestone are the principal economic deposits].—Canada Geol. Surv. Memoir 60; pp 173*;

CHAPTER XI.

STRUCTURAL AND CERAMICS.

BRICK AND TILE

Beals, A. E.—*The Cost of Burning Brick in Scove Kilns.* [A paper read before the A. I. M. E., describing the method of burning, accompanied with costs of operations].—B. & C. Rec. Feb. 1 1916; p 229; pp 2*; 30c.

Bradley, W. W.; Brown, G. C.; Lowell, F. L.; McLaughlin, R. P.—*Mines and Mineral Resources of Fresno, Kern, Kings, Madera, Mariposa, Merced, San Joaquin and Stanislaus Counties, California.* [Is divided into counties under which the various properties and prospects therein are separately described].—State Geol. Surv. Report 14456—EE; pp 220*.

Mowat, J. F.—*Rigid Tests for Fire Brick and Fire Clay.* [A description of physical and heat tests for brick and clay].—B. & C. Record Jan. 4 1916; p 32; pp 4*; 30c.

Seaver, K.—*Making Silica Brick for By-Product Coke Ovens.* [A paper read before the A. I. M. E.].—B. & C. Rec. Feb. 1 1916; p 235; pp 36; Feb. 15 1916; p 341; pp 2½; 70c.

——— *Central Station Power Applied to Southern Clay Plants.* [An article from the Electrical Rev. on the costs and uses of electrical power in brick plants in southwestern U. S.; also describing their methods of manufacture].—B. & C. Rec. Feb. 15 1916; p 331; pp 4*; 35c.

——— *Digging Brick Clay with a Revolving Shovel.* [An account of handling clay from the Chicago Drainage Canal with 1½-yd. bucket].—Excavate. Eng. May 1916; p 296; pp 2*; 20c.

——— *Steam-Shovel Coal Stripping in the Danville District, Illinois.* [The revolving, long-boom type of shovel monopolizes the field. In one mine the property is worked for both coal and clay, the latter being used in the manufacture of brick].—Coal Age Mar. 11 1916; p 449; pp 4½*; 20c.

CEMENT

Dunn, F. B.—*Industrial Uses of Fuel Oils.* [Describes methods employed and tests to be made for insuring efficient results. Oil fuel in the clay, cement, steel and metallurgical plants are discussed under separate chapters].—Technical Pub. Co., San Francisco; book; pp 235*; $3.

Hoffmann, A.—*Die Verwendung der Verschiedenen Zementarten im Kalibergbau.* [Various uses of cement in the potash salt mines of Germany].—Glückauf Dec. 25 1915; p 1249; pp 6¼; 50c.

Hough, N. G.—*Field Work of the Hydrated Lime Bureau.* [An account of field investigation of various sorts made by this bureau].—National Lime Mfg. Assn. April 1916; pp 7; 35c.

McLeish, John.—*Annual Report on the Mineral Production of Canada, 1914.* [Each mineral is reported on separately. The imports, exports, production and condition of the trade are given].—Canada Dept. of Mines, Mines Branch, No. 384; pp 362.

McLeish, John.—*Production of Cement, Lime, Clay Products, Stone and Other Structural Materials.* [Some details given for separate provinces, but for the most part in general on Canada].—Canada Dept. of Mines, Mines Branch Report 383; pp 60.

Rankin, G. A.—*Portland Cement.* [Treats on the manufacture, materials it is made from and its general physical and mechanical properties].—Jnl. of Franklin Inst. June 1916; p 747; pp 38*; 60c.

Rankin, G. A.—*The Chemistry of Portland Cement.* [A paper read before the American Concrete Inst., treating on the chemical combinations, etc., had in the mixture at various temperatures during the process of cintering].—West. Engg. May 1916; p 172; pp 5*; 25c.

Upton, G. B.—*The Structure and Properties of Materials of Construction.* [A book taking up theory and tests pertaining to the properties and uses of various construction materials].—Wiley & Son; book; pp 325*; $2.50.

Wiley, C. N.—*The Role of the Chemist in the Cement Industry.* [A paper read before the American Chemical Soc.].—Chem. Engg. Mar. 1916; p 92; pp 1½; 35c.

——— *Portland Cement Industry in 1915.*—Mg. World Feb. 5 1916; p 282; pp ¾; 10c.

——— *Potash Recovery and the Cottrell Process.* [An electrical precipitation process in this article described in use at cement plants for precipitating and saving potash from the dust precipitated].—Mg. & Oil Bull. Mar. 1916; p 77; pp 3½*; 25c.

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Allen, A. W.—*Clay: Its Relation to Ore Dressing and Cyanide Operations.* [Colloidal properties, etc., derived from the clay content are taken up and their ill effects brought out].—Bull. of Inst. Mg. & Met. London; Dec. 9 1915; pp 19*; 50c. M. & S. P. Feb. 26 1916; p 310; pp 2; 20c.

Bigot, Alexandre.—*Distribution of the Heat in Ceramic Ovens.* [Takes up the subject in detail and describes some appliances of special use in the ovens].—Trans. Eng. Ceramic Soc. 1914-15; p 96; pp 33*; 65c.

Bleininger, A. V.—*Clay Products Considered as Engineering Materials.* [A paper read before the International Engineering Congress on tests for revealing the properties of clay].—B. & C. Record Jan. 4 1916; p 48; pp 3; 30c.

Bleininger, A. V.—*Testing Clay Refractories.* [A paper read before the New Jersey Clay Weavers' Assn. Besides the description and results of tests, methods for the classification of fire-clay shapes for industrial purposes are given].—B. & C. Rec. June 6 1916; p 1030; pp 3; 35c.

Davis, N. B.—*Southern Saskatchewan and Its Clay Deposits.* [A paper read before the Canadian Clay Products Assn.].—B. & C. Rec. Feb. 1 1916; p 231; pp 3½*; 30c.

Dressler, Conrad.—*Development of the Dressler Tunnel Oven Since* 1911. [A description of the oven and the detail changes which have been made on it with the reasons for making the same].—Trans. Eng. Ceramic Soc. 1914-15; p 41; pp 21*; 65c.

Dunn, F. B.—*Industrial Uses of Fuel Oils.* [Describes methods employed and tests to be made for insuring efficient results. Oil fuel in the clay, cement, steel and metallurgical plants are discussed under separate chapters].—Technical Pub. Co., San Francisco; book; pp 235*; $3.

Fox, W. G.—*Earthenware Cost-Taking.* [Discusses the same and gives details of methods to follow for doing the same].—Trans. English Ceramic Soc. Vol. XV; p 61; pp 10; 65c.

Greaves-Walker, A. F.—*The Design and Construction of Continuous Kilns.* [Gives detail drawings and description of the construction].—B. & C. Rec. April 4 1916; p 629; pp 3*; April 18 1916; p 728; pp 4½*; May 16 1916; p 921; pp 3*; June 6 1916; p 1019; pp 3*; $1.40.

Hice, R. R.—*The Mineral Production of Pennsylvania in* 1913. [Coal, coke, petroleum, natural gas, clay, mineral paints, and stone are reviewed in general and by counties as regards their production].—Pa. Geol. Surv. Report 11; pp 108.

Hill, L. G.—*The Advantages of Extremely Fine Grinding of Materials Used in Producing Articles of a Different Nature to That of the Original Material.* [Confined more to operations in making pottery and other ceramic articles].—Trans. Eng. Ceramic Soc. 1914-15; p 62; pp 18*; 65c.

Hollinshead, A. D.; Turner, J.; Mellor, J. W.—*Cobalt and Nickel Colors.* [Takes up in detail the coloring of pottery with these metals].—Trans. of Eng. Ceramic Soc. 1914-15; p 167; pp 12*; 65c.

Longenecker, H. L.—*The Mystery Kiln.* [Describes procedure for recording results being obtained from kilns and for spotting the bad one].—B. & C. Rec. Feb. 15 1916; p 326; pp 2*; 35c.

McConnell, R. G.—*Texada Island, British Columbia.* [Complete description of geology of formation and economic geology. Copper is the principal mineral and iron, gold, lime, and clay are produced in lesser quantities].—Canada Dept. of Mines; Memoir 58; pp 111*.

McDougal, T. G.—*The Casting of Clay Wares.* [Precautions advisable when changing from the plastic to the casting process].—U. S. Bur. of Mines; Tech. Paper 126; pp 26*; 15c.

McLeish, John.—*Annual Report of the Mineral Production of Canada,* 1914. [Each mineral is reported on separately. The imports, exports, production and condition of the trade are given].—Canada Dept. of Mines, Mines Branch, No. 384; pp 362.

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Mellor, J. W.—*Some Notes on Hard or Felspathic Porcelain.*—Trans. Eng. Ceramic Soc. 1914-15; p 176; pp 17*; 65c.

Morganroth, L. C.—*Pennsylvania Fire Clay.* [Several varieties of clay are found and the more important deposits are described separately as to geology and qualities of the clay].—A. I. M. E. Bull. Feb. 1916; p 475; pp 7; 35c.

Paul, R. W.—*Electrical Pyrometry.* [A paper with particular reference to the use of the apparatus in ceramics].—Trans. Eng. Ceramic Soc. 1914-15; p 1; pp 26*; 65c.

Riddle, F. H.; Gladding, A. L.—*Time*

Temperature Curves During the Salting of Some Oil-Fired Sewer-Pipe Kilns. [The curves are reproduced and accompanied with a complete description].—B. & C. Rec. May 16 1916; p 936; pp 3½*; 35c.

Schofield, S. J.—*Geology of the Cranbrook Map-Area, British Columbia.* [Copper and silver-lead deposits are most important, though placer and vein gold, and clay are found].—Canada Dept. of Mines; Memoir 76; pp 245*.

Searle, A. B.—*Kilns and Kiln Building.* [Compiled from patent office records and gives complete details therefrom].—The Clayworker Press, Strand, Eng.; book; $1.50.

Trautwine, J. C., Jr.; Trautwine, J. C., 3rd.—*Concrete.* [A reprint of information on concrete found in the standard Trautwine Handbook].—Trautwine Co., Phil.; book; pp 200*; $1.

Wollaston, T. R.—*Power and Heat Costs in Pottery Works.* [Treats on the subject under conditions which now exist and points out more economical methods which science will inaugurate in the future].—Trans. English Ceramic Soc. Vol. XV; p 1; pp 24*; 65c.

——— *Digging Brick Clay with a Revolving Shovel.* [An account of handling clay from the Chicago Drainage Canal with 1½-yd. bucket].—Excavate. Eng. May 1916; p 296; pp 2*; 20c.

——— *Digging Dollars from the Clay Bank.* [Describes the sequence of operations at a clay pit in Mason City, Ia.].—B. & C. Rec. Feb. 15 1916; p 823; pp 3*; 35c.

LIME

Ames, J. W.; Schollenberger, C. J.—*Comparison of Lime Requirement Methods.* [Brings out the composition required now and in former years].—Jnl. Ind. & Eng. Chem. Mar. 1916; p 243; pp 3; 60c.

Burman, B. F.—*Coal, Coke and Limestone Efficiency in Blast Furnace Operation.* [Detailed costs, results and figuring for operations are given].—Met. & Chem. Eng. Mar. 1 1916; p 256; pp 2¾; 25c.

Hough, N. G.—*Field Work of the Hydrated Lime Bureau.* [An account of field investigation of various sorts made by this bureau].—National Lime Mfg. Assn. April 1916; pp 7; 35c.

Loughlin, G. F.—*Magnesia in Limestone.* [Speaks of the subject from a mineralogical standpoint and gives information on the genesis of this mineral in limestones].—National Lime Mfg. Assn. Bull. No. 4; pp 11.

McConnell, R. G.—*Texada Island, British Columbia.* [Complete descriptic of geology of formation and econom geology. Copper is the principal miner and iron, gold, lime, and clay are pr duced in lesser quantities].—Canad Dept. of Mines; Memoir 58; pp 111*.

McLeish, John.—*Production of Cemen Lime, Clay Products, Stone and Othe Structural Materials.* [Some details giv en for separate provinces but for th most part in general on Canada].—Ca ada Dept. of Mines, Mines Branch Re port 383; pp 60.

Williams, M. Y.—*Arisaig-Antigonis District, Nova Scotia.* [A complete geo logical review of the district where cop per, iron, oil-shale, gypsum and limeston are the principal economic deposits].—Canada Geol. Surv. Memoir 60; pp 173*

CONCRETE

Blount, Bertram.—*Factors Affectin the Life of Concrete Structures.* [Abst from a paper read to the Internationa Engineering Congress].—Canadian Eng Jan. 27 1916; p 181; pp 4¼; 35c.

Brown, H. P.—*Method of Relining Tunnel with Steam Jetted Concrete* [Contains complete details regarding op erations and mixing of the cement and concrete].—Engg. & Contracting Feb. 2 1916; p 181; pp 1¼*; 20c.

Chapman, C. M.; Johnson, N. C.—*Quality of Concrete by Tests of Sand* [Test methods are discussed and de scribes a portable machine for checkin and testing the raw materials].—Sibley Jnl. Jan. 1916; p 142; pp 6*; 30c.

Coleman, F. C.—*Ferro-Concrete Bunkers at the Brymbo Steel Works, Wrexham, England.* [Line drawings of the bins for receiving the lime and iron ore from the trains are given].—Coll'y Guard. May 5 1916; p 845; pp 1⅞*; 35c.

Comstock, A. E.—*Pneumatic Concrete Mixing, Conveying and Placing.* [Abst of a paper read before the American Concrete Inst.].—Comp. Air, May 1916; p 7982; pp 2½*; 20c.

Del Mar, Algernon.—*Concrete Foundation for Mining Installations.* [Gives details of the concrete work and shows drawings of many forms with discussion on this form of foundation].—Mg. World June 17 1916; p 1129; pp 2*; 10c.

Drucker, M. A.—*Diagrams for the De-*

sign of Reinforced Concrete T Beams. —Engg. & Cont. June 28 1916; p 579; pp 1½*; 20c.

Fechheimer, S. M.—*Modern Ideas on Fireproof Construction.* [Details regarding this form of reinforced concrete construction are given].—Mg. World June 10 1916; p 1081; pp 2½*; 10c.

Greer, G. E.—*An Underground Mine Stable.* [Detailed drawings, description and discussion on this type of concrete stable are given].—Coal Age June 10 1916; p 998; pp 1¾*; 20c.

Hoff, O.—*Design and Fabrication of the Tubes for the Harlem River Four-Track Subway Tunnel, New York.* [Extract from a paper in the proceedings of the Engineers' Society of Western Pennsylvania].—Engg. & Cont. June 7 1916; p 520; pp 2*; June 14; p 545; pp 3; 40c.

Hollister, S. C.—*The Moment Diagram and Its Relation to the Reinforcement in a Concrete Beam.*—Wis. Eng. Feb. 1916; p 206; pp 11*; 25c.

Montgomery, E. T.—*Building a Potter's Down Draft Kiln with a Center Stack.* [Gives a comparison with the up-draft types as regards life and economy].—B. & C. Rec. Mar. 21, 1916; p 541; pp 2*; 35c.

Smith, J. E.—*Concreting the Barron Shaft in Pachuca, Mexico.* [Detailed drawings and a detailed cost sheet are given, besides a description of the methods followed and peculiarities encountered].—E. & M. J. April 15 1916; p 676; pp 3½*; 25c.

Talbot, A. N.; Slater, W. A.—*Tests of Reinforced Concrete Slab Structures.* [Practical tests which have been made on five different large buildings of concrete. Most minute descriptions are given].—Univ. of Ill. Bull. 84; pp 128*.

Upton, G. B.—*The Structure and Properties of Materials of Construction.* [A book taking up theory and tests pertaining to the properties and uses of various construction materials].—Wiley & Son; book; pp 325*; $2.50.

Wig, R. J.; Williams, G. M.; Gates, E. R.—*Strength and Other Properties of Concrete as Affected by Materials and Methods of Preparation.* [Many tests are given, the most important being a long series of tests on concrete mixtures].—U. S. Bur. of Stand. Tech. Paper 58; pp 172*; 45c.

——— *Concrete Shaft Lining; Development of Form Handling and Concrete Placing Methods.* [Describes these installations as found in several different mines and now in use].—Engg. & Contracting Feb. 9 1916; p 144; pp 7*; 20c.

——— *Electric Power for Public Work as Brought Out at the Wilson Ave. Tunnel, Chicago.* [A complete description of electric power used in the tunnel is given. Electricity is here used for hoisting, air compression, rock crushing, haulage, ventilation and lining the tunnel with concrete].—Elect. Rev. & West. Elect. June 3 1916; p 1017; pp 6¾* 20c.

SAND AND GRAVEL

Boise, C. W.—*The Vaal River Diggings in Griqualand West.* [Operations on a large scale are not profitable here].—Mg. Mag. Jan. 1916; p 30; pp 2; 50c.

Chapman, C. M.; Johnson, N. C.—*Quality of Concrete by Tests of Sand.* [Test methods are discussed and describes a portable machine for checking and testing the raw materials].—Sibley Jnl. Jan. 1916; p 142; pp 6*; 30c.

Ells, S. V.—*Investigation of Bituminous Sands in Northern Alberta.*—Canadian Mg. Jnl. Feb. 1 1916; p 73; pp 2*; 35c.

Lohse, U. — *Sandaufbereitungsvorrichtungen der Maschinenfabrik Gebr. Pfeiffer in Kaiserslautern.* [Description of a machine for washing and grading sands].—Giesserei-Ztg. Dec. 1 1915; p 353; pp 3½*; 35c.

STONE

Baachtold, C. A.—*New Handling Plant of the Temescal Rock Co., Corona, Cal.* [Storage hoisting, crushing and haulage of the rock are described in fair detail].—Mg. World Mar. 18 1916; p 557; pp 2½*; 10c.

Bradley, W. W.; Brown, G. C.; Lowell, F. L.; McLaughlin, R. P.—*Mines and Mineral Resources of Fresno, Kern. Kings, Madera, Mariposa, Merced, San Joaquin and Stanislaus Counties, California.* [Is divided into counties under which the various properties and prospects therein are separately described].—State Geol. Surv. Report 14456—EE; pp 220*.

Carpenter, A. B.—*The Temescal Rock Company Near Corona, California.* [Describes the handling and crushing of the rock].—Mg. & Oil Bull. Mar. 1916; p 83; pp 3*; 25c.

Hice, R. R.—*The Mineral Production of Pennsylvania in* 1913. [Coal, coke, petroleum, natural gas, clay, mineral paints, and stone are reviewed in general and by counties as regards their production].—Pa. Geol. Surv. Report 11; pp 108.

Hicks, H. L.—*Quarrying at Rockland Lake, New York.* [The haulage, drilling

and power equipment and operations are described in a general way].—Engg. & Cont. June 7, 1916; p 512; pp 1¾*; 20c.

Lord, E. C. E.—*Relation of Mineral Composition and Rock Structure to the Physical Properties of Road Materials.* —U. S. Dept. of Agric. Bull. 348; pp 26*.

McLeish, John.—*Production of Cement, Lime, Clay Products, Stone and Other Structural Materials.* [Some details en for separate provinces but for most part in general on Canada].—ada Dept. of Mines, Mines Branch port 383; pp 60.

Russell, S. R.—*Modern Quarrying.* bench methods and snake-hole met are described in detail].—Dupont June 1916; p 4; pp 6*; 20c.

CHAPTER XII.

Other Non-Metals.

ABRASIVES

Tone, F. J.—*Electric Furnace Development at Niagara Falls.* [A paper presented at the American Electrochemical Soc. relating to the electric power from the Falls to the metallurgy of iron alloys and other more rare metals].—Mg. World May 13 1916; p 907; pp 2¾; 10c.

ACIDS

Austin, L. S.—*Washoe Reduction Works, Anaconda.* [This, the 3d part, describes the slime-flotation plant, zinc plant, copper leaching plant and acid and roasting plants in conjunction therewith].—M. & S. P. April 15 1916; p 547; pp 9*; 20c.

Barber, C.—*Coking, the Recovery and Working-Up of By-Products.* [A paper read before the Sheffield Univ. Gas & Coke Oven Students' Assn. This part is on the manufacture of sulphuric acid as a by-product].—I. & C. Tr. Rev. May 5 1916; p 518; pp 2¾*; 35c.

Fay, A. H.—*Coal Mine Fatalities in the United States,* 1915. [Besides tables and description regarding accidents lists are given of permissible explosives, electric lamps and motors, tested prior to Jan. 1 1916].—U. S. Bur. of Mines; pp 80*; 20c.

Martin, G.; Foucar, J. L.—*Sulphuric Acid and Sulphur Products.* [Describes modern plants, their methods and other common methods of manufacturing sulphur products. Statistics are given].—Crosby, Lockwood & Son, London; book; pp 100*; $2.

Waggaman, W. H.—*The Production of Sulphuric Acid and a Proposed New Method of Manufacture.* [Old methods are described and briefly discussed and the new system proposed is a modification of the chamber process].—U. S. Dept. of Agric. Bull. 283; pp 39; 20c. Mg. World May 6 1916; p 871; pp 1¾; 10c.

Wise, J. B.—*The Roasting and Sulphuric Acid Plants of the Braden Copper Co., Chile.* [A complete description of chemical reactions and general methods of operations. There is also a flow sheet of the acid plant].—Teniente Topics Dec. 1915; p 1; pp 8*; 35c.

——— *Die Pyritschmelzung und die Schwefelsäureerceugung.* [On pyrite smelting and sulphuruc acid as a product therefrom].—Kali, Erz & Kohle Feb. 25 1916; p 63; pp 1¼; 35c.

——— *Roasting and Acid Making at Braden, Chile.* [Abst. from Teniente Topics, being a brief description of the Braden Copper Co.'s plant].—M. & S. P. June 3 1916; p 827; pp 1¼*; 20c.

ARSENIC

Angwin, B.—*Cornish Mines During* 1915, *England.* [Gives the revenues, production and costs at the principal mines during 1915. Considerable of the information is in tabulated form].—Mg. Mag. April 1916; p 204; pp 2; 50c.

Bridges, R. V.—*The Metallurgy of Canadian Cobalt Ores.* [The results of much satisfactory investigating. Nickel, arsenic, cobalt and silver are obtained and details are given on a 3 months' test of roasting, in regard to the silver losses].—Canadian Mg. Jnl. Feb. 1 1916; p 68; pp 2; 35c.

Wise, J. B.—*Braden Roasting and Sulphuric Acid Plants, Chile.* [A complete description of the plant and its operations].—Mg. World April 29 1916; p 823; pp 5¾*; 10c.

ASBESTOS

Diller, J. S.—*Asbestos in* 1915. [Deals with production and conditions of the trade].—Min. Res. U. S. II:4; pp 6.

Denis, T. C.—*Mining in Quebec During the Year* 1915. [Asbestos and various non-metallic products make up 91 per cent of the product and metals only 9 per cent].—Canadian Mg. Jnl. Jan. 1 1916; p 9; pp ¾; 35c.

Denis, T. C.—*Mining in the Province of Quebec During* 1915. [Gives general information and production of asbestos, chrome, sulphur, copper, zinc, lead, magnesite and other less important minerals].—Canadian Mg. Inst. Bull. Jan. 1916; p 12; pp 3½; 35c.

McLeish, John.—*Preliminary Report on the Mineral Production of Canada.* [Abst. from a report by the Division of Mineral Resources of Canada. Copper, lead, zinc, asbestos, coal and coke are considered].—Mg. World April 22 1916; p 781; pp 1½; 10c.

Stone, S. R.—*Cableway of Asbestos Corporation of Canada.* [Open

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used and the material taken out by aerial trams].—Mg. World Feb. 19 1916; p 397; pp 2½*; 10c.

——— *Outside Transvaal Mining Industries.* [From the October report of the Department of Mines, S. Afr. Asbestos and mica mining in the Carolina and Leydsdorp districts near the Transvaal, South Africa].—S. Afr. Mg. Jnl. Jan. 22 1916; p 484; pp 1⅛; 35c.

ASPHALTS

Schneider, E.—*Gussasphalt für Fahrbahnen.* [The mining of asphalt for use in making roads, etc.].—Bitumen Dec. 16 1915; p 247; pp 2½*; 35c.

BAUXITE

Balz, G. A.—*Why Refractories Are a World Necessity.* [A general talk on elements which go to make up the refractory product, such as silica, magnesite, bauxite, chromite, graphite and other materials of less importance].—B. & C. Rec. April 18 1916; p 739; pp 3½; 35c.

Wysor, D. C.—*Aluminum Hydrates in the Arkansas Bauxite Deposits.* [Describes the deposits and gives the analyses of many samples taken from the various separate deposits].—Econ. Geol. Jan. 1916; p 42; pp 9; 60c.

CRYOLITE

Bernard, C. P.—*The Cryolite Mine at Ivigtut, Greenland.* [This is the only deposit in the world and the double fluoride of sodium and aluminum. Is used in manufacturing aluminum].—Mg. Mag. April 1916; p 202; pp 2*; 50c.

FELDSPAR

Barr, J. A.—*The Use of Low Grade Phosphates.* [Speaks of methods of concentration and the uses of the mineral for fertilizing].—A. I. M. E. Feb. 1916; p 243; pp 3; 35c.

Mellor, J. W.—*Some Notes on Hard or Felspathic Porcelain.*—Trans. Eng. Ceramic Soc. 1914-15; p 176; pp 17*; 65c.

Watts, A. S.—*The Feldspars of the New England and North Appalachian States.* [Contains description of the geology and separate descriptions of the quarries. Tests for the feldspar are given, as are methods of quarrying, pumping, crushing, concentration, etc.].—U. S. Bur. of Mines Bull. 92; pp 181*; 35c.

FERTILIZERS

Bell, R. M.—*Idaho Phosphate Resources.* [A paper read before the Idaho Society of Engineers].—Jnl. of Elect. Power & Gas Mar. 25 1916; p 243; pp 3¼; 35c.

Jenkins, O. P.—*Phosphates and Dolomites of Johnson County, Tennessee.* [A description of the formation in which the phosphate rocks occur and analyses of the phosphate rocks, with short descriptions of properties, now operating].—Resources of Tenn. April 1916; p 51; pp 56*.

Krusch, P.—*Die Erz- und Phosphatlagerstäten Belgiens.* [On the ore and phosphate deposits of Belgium, including lead, zinc, iron, coal and manganese].—Glückauf Mar. 4 1916; p 185; pp 5*; Mar. 11; p 210; pp 9*; $1.

Laucks, I. F.—*Potash from Kelp.* [Tells of the methods used in growing, harvesting and refining kelp, a seaweed, for its potash contents].—Met. & Chem. Engg. Mar. 15 1916; p 304; pp 4½*; 30c.

Mansfield, G. R.—*A Reconnaissance for Phosphate in the Salt River Range, Wyoming.* [Deals with the geology from a prospecting point of view].—U. S. G. S. Bull. 620-O; pp 19*.

FLUORSPAR

Burchard, E. F.—*Fluorspar in* 1915. [The report shows that the production has materially increased and the imports decreased to nearly a negligible quantity].—Min. Res. of U. S. II:6; pp 9.

FULLER'S EARTH

Middleton, J.—*Fuller's Earth in* 1915. [Treats on the occurrence, uses, production, the industry by states].—Min Res. of U. S. II:3; pp 4.

GEMS

Boise, C. W.—*The Vaal River Diggings in Griqualand West.* [Operations on a large scale are not profitable here].—Mg. Mag. Jan. 1916; p 30; pp 2; 50c.

Farrington, O. C.—*Studies of Brasilian Favas.* [Favas is the name given to a number of rare mineral-stones occurring with diamonds. Analysis and the results of investigation are here given].—Amr. Jnl. of Sci. April 1916; p 355; pp 6; 60c.

Fowler, Frank.—*Mining in British*

Guiana. [Abst. from a report of the Commissioner of Land and Mines. Hydraulicking and dredging for gold and diamonds is reviewed and production figures given].—E. & M. J. April 22 1916; p 725; pp 1½; 25c.

Gregory, H. E.—*Garnet Deposits on the Navajo Reservation, Arizona and Utah.* [Geology, distribution and occurrence are the principal items of the article].—Eco. Geol. May 1916; p 223; pp 8*; 60c.

Marriot, H. F.—*Transvaal Mining in* 1915. [Doings of the mines and mills and gem industry during the year with production figures].—E. & M. J. Jan. 8 1916; p 122; pp 2; 25c.

Marriott, H. F.—*Transvaal Mining in* 1915. [Social and technical questions, including production of the diamond and gold fields of the country, are considered].—S. Afr. Mg. Jnl. Feb. 26 1916; p 596; pp 2; 35c.

Miller, B. L.; Singewald, J. T.—*Mining Industry in Brazil.* [Principally gold, manganese, monazite sands and gems, though deposits of iron not being worked are there. Speaks of the government railroad].—E. & M. J. April 29 1916; p 759; pp 3¾*; 25c.

Pogue, J. E.—*The Emerald Deposits of Muzo, Colombia.* [A complete description covering, history, geology, production mineralogy and genesis of the formation and deposits].—Bull. A. I. M. E.; May 1916; p 798; pp 24*; 35c.

Wagner, P. A.—*Economic Geology and Mineral Industry of Southwest Africa.* [Prospecting, sampling, dredging, washing and dressing, water supply and transportation in the diamond fields of this area are reviewed].—S. Afr. Mg. Jnl. May 6 1916; p 133; pp 1; 35c.

——— *Queensland Mining Industry.* [A review of 1915 made by the Under-Secretary for Mines. The condition of all things related to this department is taken up, including the production and condition of the several metal mining industries].—Queen. Govt. Mg. Jnl. Mar. 15 1916; p 101; pp 17; 35c.

——— *Diamond Mining in Southwest Africa.*—S. Afr. Engg. April 1916; p 67; pp 1½*; 35c.

GRAPHITE

Shelley, J. W.—*Graphite in Madagascar.* [Takes up geology, prospecting, mining, costs, labor conditions, production, law and a general description of the country and conditions to be found there].—Mg. Mag. June 1916; p 324; pp 7*; 50c.

Tone, F. J.—*Electric Furnace Development at Niagara Falls.* [A paper presented at the American Electrochemical Soc. relating to the electric power from the Falls to the metallurgy of iron alloys and other more rare metals].—Mg. World May 13 1916; p 907; pp 2¾; 10c.

GYPSUM

Williams, M. Y.—*Arisaig-Antigonish District, Nova Scotia.* [A complete geological review of the district where copper, iron, oil-shale, gypsum and limestone are the principal economic deposits].—Canada Geol. Surv. Memoir 60; pp 173*.

MAGNESITE

Balz, G. A.—*Why Refractories Are a World Necessity.* [A general talk on elements which go to make up the refractory product, such as silica, magnesite, bauxite, chromite, graphite and other materials of less importance].—B. & C. Rec. April 18 1916; p 739; pp 3½; 35c.

Bradley, W. W.—*Mines and Mineral Resources of Colusa, Glenn, Lake, Marin, Napa, Solano, Sonoma and Yola Counties, Cal.* [Building materials, sulphur, magnesite and gravel are produced. Synopses on the deposits and equipment of companies, with figures on production of the minerals are given].—Cal. State Mg. Bur.; pp 208*.

Denis, T. C.—*Mining in the Province of Quebec During* 1915. [Gives general information and production of asbestos, chrome, sulphur, copper, zinc, lead, magnesite and other less important minerals]. Canadian Mg. Inst. Bull. Jan. 1916; p 12; pp 3½; 35c.

Grosvenor, W. M.—*Magnesium.* [A general review of the metal, method of manufacture and production].—American Electrochem. Soc. Bull. p. 163; pp 6; 35c.

Grosvenor, W. H.—*The New Place of Magnesium in Industry.* [A paper read before the American Electrochemical Soc. Its uses in alloys and as a scavenger in steel, with costs of making, production and some of its properties are given].—Iron Age Feb. 17 1916; p 434; pp 2; 30c. E. & M. J. April 8 1916; p 652; pp 2; 25c.

Loughlin, G. F.—*Magnesia in Limestone.* [Speaks of the subject from a mineralogical standpoint and gives information on the genesis of this mineral in limestones].—National Lime Mfg. Assn. Bull. No. 4; pp 11.

and power equipment and operations are described in a general way].—Engg. & Cont. June 7, 1916; p 512; pp 1¾*; 20c.

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Russell, S. R.—*Modern Quarrying.* [The bench methods and snake-hole methods are described in detail].—Dupont Mag. June 1916; p 4; pp 6*; 20c.

CHAPTER XII.

Other Non-Metals.

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Tone, F. J.—*Electric Furnace Development at Niagara Falls.* [A paper presented at the American Electrochemical Soc. relating to the electric power from the Falls to the metallurgy of iron alloys and other more rare metals].—Mg. World May 13 1916; p 907; pp 2¾; 10c.

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Austin, L. S.—*Washoe Reduction Works, Anaconda.* [This, the 3d part, describes the slime-flotation plant, zinc plant, copper leaching plant and acid and roasting plants in conjunction therewith].—M. & S. P. April 15 1916; p 547; pp 9*; 20c.

Barber, C.—*Coking, the Recovery and Working-Up of By-Products.* [A paper read before the Sheffield Univ. Gas & Coke Oven Students' Assn. This part is on the manufacture of sulphuric acid as a by-product].—I. & C. Tr. Rev. May 5 1916; p 518; pp 2¾*; 35c.

Fay, A. H.—*Coal Mine Fatalities in the United States,* 1915. [Besides tables and description regarding accidents lists are given of permissible explosives, electric lamps and motors, tested prior to Jan. 1 1916].—U. S. Bur. of Mines; pp 80*; 20c.

Martin, G.; Foucar, J. L.—*Sulphuric Acid and Sulphur Products.* [Describes modern plants, their methods and other common methods of manufacturing sulphur products. Statistics are given].—Crosby, Lockwood & Son, London; book; pp 100*; $2.

Waggaman, W. H.—*The Production of Sulphuric Acid and a Proposed New Method of Manufacture.* [Old methods are described and briefly discussed and the new system proposed is a modification of the chamber process].—U. S. Dept. of Agric. Bull. 283; pp 39; 20c. Mg. World May 6 1916; p 871; pp 1¾.; 10c.

Wise, J. B.—*The Roasting and Sulphuric Acid Plants of the Braden Copper Co., Chile.* [A complete description of chemical reactions and general methods of operations. There is also a flow sheet of the acid plant].—Teniente Topics Dec. 1915; p 1; pp 8*; 35c.

——— *Die Pyritschmelzung und die Schwefelsäureerceugung.* [On pyrite smelting and sulphuruc acid as a product therefrom].—Kali, Erz & Kohle Feb. 25 1916; p 63; pp 1¼; 35c.

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Angwin, B.—*Cornish Mines During* 1915, *England.* [Gives the revenues, production and costs at the principal mines during 1915. Considerable of the information is in tabulated form].—Mg. Mag. April 1916; p 204; pp 2; 50c.

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Wise, J. B.—*Braden Roasting and Sulphuric Acid Plants, Chile.* [A complete description of the plant and its operations].—Mg. World April 29 1916; p 823; pp 5¾*; 10c.

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Diller, J. S.—*Asbestos in* 1915. [Deals with production and conditions of the trade].—Min. Res. U. S. II:4; pp 6.

Denis, T. C.—*Mining in Quebec During the Year* 1915. [Asbestos and various non-metallic products make up 91 per cent of the product and metals only 9 per cent].—Canadian Mg. Jnl. Jan. 1 1916; p 9; pp ¾; 35c.

Denis, T. C.—*Mining in the Province of Quebec During* 1915. [Gives general information and production of asbestos, chrome, sulphur, copper, zinc, lead, magnesite and other less important minerals].—Canadian Mg. Inst. Bull. Jan. 1916; p 12; pp 3½; 35c.

McLeish, John.—*Preliminary Report on the Mineral Production of Canada.* [Abst. from a report by the Division of Mineral Resources of Canada. Copper, lead, zinc, asbestos, coal and coke are considered].—Mg. World April 22 1916; p 781; pp 1½; 10c.

Stone, S. R.—*Cableway of Asbestos Corporation of Canada.* [Open pits are

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Coke Oven Managers' Assn. Speaks of test work, showing the effect of salts contained in coal on the refractory lining of coke oveins].—Coll'y Guard. Mar. 31 1916; p 605; pp 1½. I. & C. Tr. Rev. Mar. 31; p 374; pp 1½; 35c.

Heberle, B. — *Erfahrung mit dem Sprengstoff Flüssiger Sauerstoff (Flüssige Luft) im Kali bergbau.* [On the use of liquid-air for blasting in the potash salt mines of Germany].—Kali April 15 1916; p 113; pp 8½*; 35c.

Jänecke, E. — *Die Entstehung der Deutschen Kalisalzlager.* [A description of the salt beds of Germany].—Zts. Internat. Vereines Bohringenieure Mar. 1 1916; p 41; pp 4½; 35c.

Krische, P.—*Die Kriegswirtschaftliche Bedeutung der Deutschen Kalidüngesalze.* [The production, imports and exports of salts of potash and other elements during the war in Germany].—Kali Dec. 15 1915; p 373; pp 8¼; 35c.

Seidl, Kurt.—*Ueber den Verheib der Kalisalzlagerstätten durch Reinen Versatzbau.* [On the geology and mining methods of salt bodies in Germany. A room and pillar system is used].—Zts. Oberschles. Berg & Hütten-Vereins Sept. 1914; p 331; pp 13½*; 50c.

Singewald, J. T., Jr.; Miller, B. L.—*The Mining Industry of Peru.* [Besides talking of the metals mined the question of labor, law and transportation are spoken of].—E. & M. J. May 13 1916; p 345; pp 5½*; 25c.

——— *Administration Leasing Bill.* [Applies to coal, phosphate, oil, gas, and potassium and sodium saline deposits].—Mg. & Oil Bull. Jan. 1916; p 34; pp 3¾; 25c.

——— *Die Bergarbeiterlöhne im Salzbergbau in Preutzen im Letzten Vierteljahr* 1914 *und in den Beiden Ersten Vierteljahren* 1915. [The salt mining industry in Prussia in the last half of 1914 and the first half of 1915].—Kali Nov. 30 1915; p 381; pp 1½; 35c.

——— *Die Unter der Preussischen Berg-, Hütten-, und Salinenverwaltung Stehenden Staatswerke im Jahre* 1914. [Treats on the salt, iron, coal, copper and smelting industries operated by the Prussian government].—Glückauf Feb. 19 1916; p 150; pp 4¼; 50c.

SULPHUR

Campbell, J. R.—*Sulphur Elimination in Coking Process.* [A paper read before the A. I. M. E. explaining aeration and watering in beehive and by-product coking, accompanied with the chemical reactions involved].—Iron Age Feb. 10 1916; p 374; pp 1½; 30c.

Denis, T. C.—*Mining in the Province of Quebec During* 1915. [Gives general information and production of asbestos, chrome, sulphur, copper, zinc, lead, magnesite and other less important minerals].—Canadian Mg. Inst. Bull. Jan. 1916; p 12; pp 3½; 35c.

Johnson, J. E., Jr.—*Burdening the Blast Furnace.* [On the control of various constituents in the charge in regard to the amount which will give good furnace operations and the kind of iron desired].—Met. & Chem. Engg. April 15 1916; p 443; pp 7¾; 30c.

Martin, G.; Foucar, J. L.—*Sulphuric Acid and Sulphur Products.* [Describes modern plants, their methods and other common methods of manufacturing sulphur products. Statistics are given].—Crosby, Lockwood & Son, London; book; pp 100*; $2.

Moore, H. C.—*A Rapid Control Method for the Determination of Sulphur in Pyrite Cinders.* [Consists first of fusing with sodium peroxide].—Jnl. of Indt. & Engg. Chem. Jan. 1916; p 27; pp 1¾; 60c.

Paul, H. W.—*Mining in Japan in* 1915. [Production and discussion are given on manganese, pyrite, sulphur, gold, silver, copper, coal and iron].—E. & M. J. Jan. 15 1916; p 133; pp 1½; 25c.

Unger, J. S.—*High and Low Sulphur in Basic Steel.* [Results of experiments in varying the sulphur in open-hearth practice, showing that no difference in finishing high sulphur products is necessary].—Iron Age Jan. 13 1916; p 146; pp 4¾*; 30c.

Unger, J. S.—*Sulphur Does Not Injure Openhearth Steel.* [Abst. from an article in Engg. News. Deals with the results of many practical investigations made by the Carnegie Steel Co.].—E. & M. J. April 1 1916; p 595; pp 2¼; 25c.

——— *Analysis and Assay of Zinc Retort Residue.* [Methods used in the American Zinc Co.'s plant for determining carbon, zinc, iron, sulphur, lead, copper, silica and silver].—Met. & Chem. Engg. Feb. 15 1916; p 200; pp 1½; 30c.

——— *Italian Mineral Industry.* [Gives the production, prices, etc., prevailing in the several mineral industries of the country, principal of which are sulphur, zinc, iron ore, mercury and other less important minerals].—Mg. Jnl. April 29 1916; p 286; pp 2; 35c.

——— *L'Industria Minerale Italiana nel* 1914. [Treats on the mineral industry and production in general for Italy dur-

ing 1914].—Revista Sci. Jan. 25 1916; p 19; pp 2; 35c.

TALC AND SOAPSTONE

Hatmaker, B. J.—*St. Lawrence County, New York, Zinc Field.* [This field, which is already a great producer of talc, is destined to become a large zinc producer also].—Mg. World April 8 1916; p 689; pp 1¾*; 10c.

MISCELLANEOUS NON-METALS (Unclassified)

Balz, G. A.—*Why Refractories Are a World Necessity.* [A general talk on elements which go to make up the refractory product, such as silica, magnesite, bauxite, chromite, graphite and other materials of less importance].—B. & C. Rec. April 18 1916; p 739; pp 3½; 35c.

Barr, J. A.—*Use of Low-Grade Phosphates Is Increasing.* [Abst. from the A. I. M. E. Bulletin].—Mg. World Feb. 26 1916; p 435; pp 1¼; 10c.

Denis, T. C.—*Mining in Quebec During the Year* 1915. [Asbestos and various non-metallic products make up 91 per cent of the product and metals only 9 per cent].—Canadian Mg. Jnl. Jan. 1 1916; p 9; pp ¾; 35c.

Dewey, H.; Bromehead, C. E. N.; Carruthers, R. G.—*Special Reports on the Mineral Resources of England.* [Vol. I is on tungsten and manganese ores and Vol. II on the minerals barytes and witherite].—Geol. Surv. of England, London; book; 50c.

Jenkins, O. P.—*Phosphates and Dolomites of Johnson County, Tennessee.* [The geologic history, mineralogy, occurrence analyses of samples and geological structure of the country are all considered].—Res. of Tenn. April 1916; p 61; pp 56*.

Johnson, J. E., Jr.—*Burdening the Blast Furnace.* [On the control of various constituents in the charge in regard to the amount which will give good furnace operations and the kind of iron desired].—Met. & Chem. Engg. April 15 1916; p 443; pp 7¾; 30c.

McCaskey, H. D.—*Mineral Production of the United States in* 1914. [The subject is taken up separately by the minerals and collectively by production of the U. S. —Min. Res. of U. S. I:A; pp 69.

Pratt, L. S.—*Radio-Actavity of Allanite.*—Bull. A. I. M. E. May 1916; p 865; pp 1; 35c.

Preston, T. H.—*The Urals and Their Mineral Wealth.* [Steel, copper, platinum, osmiridium and miscellaneous other minerals are reviewed as regards their industry and production].—Mg. Mag. April 1916; p 197; pp 5; 50c.

Russell, A. S.—*Rare Earth Industry.* [Contains a chapter on radio-actives].—Crosby Lockwood & Son, London; book; $2.25.

Toch, Maximilian.—*The Barium Industry in United States Since the European War.* [A paper read before the American Chem. Soc. on the general conditions prevailing in the industry].—Met. & Chem. Engg. Jan. 1 1916; p 47; pp 2½*; 30c.

——— *Administration Leasing Bill.* [Applies to coal, phosphate, oil, gas, and potassium and sodium saline deposits]. —Mg. & Oil Bull. Jan. 1916; p 34; pp 3¾; 25c.

——— *Mineral and Metal Production in the United States in* 1915. [A general review].—Mg. World Feb. 5 1916; p 229; pp 2; 10c.

PART III.

TECHNOLOGY.

MINES AND MINING (a*).

CHAPTER XIII.

PROSPECTING

Brayton, C. C.—*Prospecting Before Dredging on Seward Peninsula, Alaska.* [Takes up the prospect drilling of placer ground in detail].—M. & S. P. April 29 1916; p 627; pp 5¾*; 20c.

Burrows, A. G.—*The Porcupine Gold Area.* [From a report by the Ontario Bureau of Mines. Early prospecting, together with history and geology are brought out].—Canadian Mg. Jnl. Feb. 15 1916; p 93; pp 3¼; 35c.

Estep, H. Cole.—*Iron Mining on the Menominee Range, Michigan.* [Brings out history of the Porter lands and describes geology, nature of the deposits and origin].—I. Tr. Rev. Jan. 20 1916; p 179; pp 6*; 25c.

Grunow, W. R.—*Churn-Drill Prospecting at Morenci, Arizona.* [The drilling is being done by the Detroit Copper Co. Methods of operation and sampling are given. The total cost per foot, including the cost of the drill, is $3.257, without $2.048. A cost sheet is given].—E. & M. J. June 3 1916; p 5¾*; 25c.

Harding, W. K.—*Field for the Prospector in Manitoba, Canada.* [But little prospecting has been done in this province. Some of the prospects and their results are spoken of. Mention is made of the formation found in many places which tend to indicate the presence of good ore deposits because of correlation].—Mg. World May 27, 1916; p 993; pp 3½*; 10c.

Le Fevre, S.—*Mystery of the Divining Rod.* [Treats on an experience with the divining rod as handled by Von Uslar and the findings therefrom checked by other surveys at the deposits near Mineville, N. Y.].—E. & M. J. April 8 1916; p 651; pp 1; 25c.

Lupton, C. T.—*Oil and Gas Near Basin, Big Horn County, Wyoming.* [A compilation of geological data from which may be ascertained the probabilities of oil in some certain vicinity].—U. S. G. S. Bull. 621—L; pp 34*.

Mansfield, G. R.—*A Reconnaissance for Phosphate in the Salt River Range, Wyoming.* [Deals with the geology from a prospecting point of view].—U. S. G. S. Bull. 620-O; pp 19*.

Notman, Arthur.—*Costs of Churn Drilling at Sacramento Hill, Arizona.* [Abst. from the A. I. M. E. Bull. Data was obtained from operations of the Copper Queen Co., near Bisbee, and are given in detail with description].—E. & M. J. Jan. 29 1916; p 226; pp 1¼; 25c.

Probert, F. H.—*Surficial Indications of Copper.* [A study of surface geological features which would point to deposits of copper below the surface].—M. & S. P. May 6 1916; p 665; pp 7*; 20c.

Probert, F. H.—*Surficial Indications of Copper.* [Discusses topographic features and shows in what way they indicate the presence of ore. Appearance of the outcrops are considered in a similar way].—M. & S. P. June 3 1916; p 815; pp 6¼*; 20c.

Probert, F. H.—*Surficial Indications of Copper.* [Discusses and describes in detail the chemistry of the oxidized zone].—M. & S. P. June 17 1916; p 893; pp 6¾*; 20c.

Shaw, E. W.; Matson, G. C.; Wegemann, C. H.—*Natural Gas Resources of Parts of North Texas.* [Made to ascertain the extent of the deposits working and possibilities of new wells in the field 100 miles northwest of Fort Worth].—U. S. G. S. Bull. 629; pp 126*.

Shelley, J. W.—*Graphite in Madagascar.* [Takes up geology, prospecting, mining, costs, labor conditions, production,

*(a) Includes Prospects and Prospecting, Surveying and Drafting, Drilling and Boring, Sampling, Explosives and Blasting, Shafts and Shaft Sinking, Lighting and Signalling, Pumps and Pumping, Tunnels and Tunneling, Mine Gas, Mine Water, Mine Temperature, Ventilation, Supports, Hoists and Hoisting, Dredging, Power Shovels and Excavators, Hydraulic Mining, Mining Costs and Miscellaneous.

law and a general description of the country and conditions to be found there].—Mg. Mag. June 1916; p 324; pp 7*; 50c.

Stebinger, Eugene.—*Geology and Coal Resources of Northern Teton County, Montana.* [The geology is incidental and the aim is to discuss the quantity and value of the deposits not being worked].—U. S. G. S. Bull. 621—K; pp 40*.

Wagner, P. A.—*Economic Geology and Mineral Industry of Southwest Africa.* [Prospecting, sampling, dredging, washing and dressing, water supply and transportation in the diamond fields of this area are reviewed].—S. Afr. Mg. Jnl. May 6 1916; p 133; pp 1; 35c.

Watts, W. L.—*The Examination of Prospects and Mines.* [A talk on what the examining engineer should do and the methods of sampling and later estimating which he should employ].—Mg. & Oil Bull. Feb. 1916; p 56; pp 2¼; 25c.

Wells, John.—*A New Method of Indicating the Geology of an Oil Field.* [A transparent model, similar to the glass model, which gives a perspective view].—Petro. World Oct. 1915; p 494; pp 3*; 35c.

——— *Nevada Consolidated Copper Co., Nevada.* [Abst. from annual report. Information on finances, prospecting, ore reserves, milling and smelting, mining costs and operations].—E. & M. J. April 22 1916; p 734; pp 1¼; 25c.

SURVEYING AND DRAFTING

Burgess, R. J.—*Mine Sampling and Mapping.* [Describes methods for the daily sampling of mines worked on the squareset system].—E. & M. J. Mar. 25 1916; p 551; pp 1¼; 25c.

Butcher, E. W. R.—*Standard Sub Turns.* [Treats on the standardizing of curves in sub-level haulage so that a supply of tracks may be had and thus eliminate the work of specially bending them].—E. & M. J. June 10 1916; p 1029; pp ¾*; 25c.

Cary, E. R.—*Geodetic Surveying.* [An up-to-date text on the subject].—Wiley & Son; book; pp 272*; $2.50.

Dickenson, E. H.; Volker, H. J.—*Samples and Their Interpretation.* [Methods are herein given on methods of mapping to show the value, width and tonnage of ore. Specific forms for recording and keeping data are also given in detail].—E. & M. J. May 27 1916; p 933; pp 3½*; 25c.

Le Fevre, S.—*Mystery of the Divining Rod.* [Treats on an experience with the divining rod as handled by Von Uslar and the findings therefrom checked by other surveys at the deposits near Mineville, N. Y.].—E. & M. J. April 8 1916; p 651; pp 1; 25c.

Marsh, H. W.—*Six Place Logarithms.* [Contains the logarithms of both plane numbers and trigonometric functions].—Wiley & Son; book; pp 155; $1.25.

Marshall, M. H.—*Notes on Tunnel Survey Work.* [Methods of determination for lines connecting shafts and separate underground tunnels].—Canadian Eng. Feb. 10 1916; p 237; pp 3½*; 35c.

McCrystle, J. — *Underground Mine Roads.* [Details of methods for surveying for haulage ways in coal mines are given and a discussion on better plans for haulage ways in coal mines].—Coal Age June 3 1916; p 959; pp 5½*; 20c.

McCrystle, J. — *Underground Mine Roads.* [A list of set rules to be adhered to by the track layers and foremen. They have to do with details, distances, etc., to be noted by the trackmen and surveyors].—Coal Age June 10 1916; p 1000; pp 3¼*; 20c.

Palmer, H. S.—*Nomographic Solutions of Certain Stratigraphic Measurements.* [Describes a graphic method for determining the thickness of strata from geological and topographical data].—Econ. Geol. Jan. 1916; p 14; pp 15*; 60c.

Popplewell, W. C.—*The Elements of Geodesy and Surveying.* — Longman's Green Co., New York; book; pp 240*; $2.25.

Porter, C. A.—*A Quick Method of Locating Geological Features.* [Gives a method almost identical with the triangulation method in surveying].—M. & S. P. May 20 1916; p 749; pp ¾*; 20c.

Raymond, W. G.—*Railroad Field Manual for Civil Engineers.* [The book contains 31 figures and 83 tables].—Wiley & Son; book; pp 398*; $3.

Reid, F. B.—*Precise Leveling by the Geodetic Survey.* [A review of the work being done by the Geodetic Survey of Canada in establishing a precise system of levels].—Canadian Eng. April 20 1916; p 451; pp 4*; 35c.

Searles, W. H.; Ives, H. C.—*Field Engineering.* [This is the 17th revised edition].—Wiley & Son; book; pp 323*; $3.

Tracy, L. D.—*Adaption of Modern Traverse Tables to Mine Surveys.*—Coal Age Mar. 25 1916; p 528; pp 3*; 20c.

——— *Table Convenient for the Mine Transitman.* [A table for converting the angle distance to a right angle distance in the running of coal mine entries].—Coal Age May 6 1916; p 797; pp 1; 20c.

ORE RESERVES

Barr, J. A.—*Use of Low-Grade Phosphates Is Increasing.* [Abst. from the A. I. M. E. Bulletin].—Mg. World Feb. 26 1916; p 435; pp 1¼; 10c.

Bell, R. N.—*Idaho Phosphate Resources.* [A paper read before the Idaho Society of Engineers].—Jnl. of Elect. Power & Gas Mar. 25 1916; p 243; pp 3¼; 35c.

Cameron, F. K.—*Possible Sources of Potash in America.* [Abst. from the Journal of the Franklin Institute. Takes up sources as alunite, feldspar, kemp, desert basin deposits, etc.].—American Fertilizer; p 21; pp 5¼; 25c.

Clapp, F. G.—*Petroleum and Natural Gas Resources of Canada.* [Abst. from a 386 page Bull. of the Mines Branch. Speaks of the deposits in the several provinces and gives figures on their production].—Mg., Engg. & Elect. Rec. Feb. 1916; p 12; pp 1½; 35c.

Doelter, C.—*Die Mineralschätze der Türkei.* [Gives separate briefs on the mineral resources of Turkey, including chromium, iron, gold, antimony, silver, lead, mercury, and copper].—Montanist. Rund. April 16 1916; p 217; pp 4; 35c.

Jackling, D. C.—*A Year's Results at the Chino Copper Property, New Mexico.* [Abst. from the annual report. Milling and mining operations are given with figures on production and the itemized cost for the same].—Mg. World April 22 1916; p 787; pp 1¾; 10c.

Krusch, P.—*The Campine Coal Field, Germany.* [Speaks of the reserves of this field and their relation to other fields of northwestern Europe]. — Coll'y Guard. Mar. 17 1916; p 505; pp 2⅓*; 35c.

Leith, C. K.—*Conservation of Iron Ore.* [Points out the places where our ore deposits are being wasted, such as incomplete methods of mining and later refining].—A. I. M. E. Bull. Feb. 1916; p 227; pp 5; 35c.

Lupton, C. T.—*Geology and Coal Resources of Castle Valley in Carbon, Emery and Sevier Counties, Utah.* [The land is to be reopened to entries. Coal from 8,000 to 14,000 B. T. U. value is found. General geology of the formation and separate descriptions of the different seams are given].—U. S. G. S. Bull. 628; pp 88*; 30c.

Morgan, P. G.; Bartrum, J. A.—*The Geology and Mineral Resources of the Buller-Mokihinui Subdivision, Westport Division, New Zealand.*—N. Z. Geol. Surv., Wellington; Bull. No. 17; pp 210; 75c.

Norton, T. H.—*The Potash Famine, Its Magnitude and Effects and Remedies Promised for the Future.* [Reproduced from the Scientific American].—Amer. Fertilizer Mar. 4 1916; p 21; pp 5*; 25c.

Pratt, W. E.—*The Iron Ores of the Philippine Islands.* [The ores were discovered in 1664 and are of the several different varieties. History, genesis of the deposits and geology of the surrounding formation are all taken up in some detail].—A. I. M. E. Bull. Feb. 1916; p 247; pp 16*; 35c.

Shaw, E. W.; Matson, G. C.; Wegemann, C. H.—*Natural Gas Resources of Parts of North Texas.* [Made to ascertain the extent of the deposits, working and possibilities of new wells in the field 100 miles northwest of Fort Worth].—U. S. G. S. Bull. 629; pp 126*.

Smith, G. O.—*The Public Interest in Mineral Resources.* [Discusses the subject from the point of interest as a resource and asset to the country and not individual owners of mines only].—Min. Res. of U. S.; I:A; pp 9.

Soper, E. K.—*The Peat Deposits of Minnesota.* [A description of the nature of the different peat deposits in all parts of the state].—Jnl. American Peat Soc. April 1916; p 81; pp 8; $1.60.

Stebinger, Eugene.—*Geology and Coal Resources of Northern Teton County, Montana.* [The geology is incidental and the aim is to discuss the quantity and value of the deposits not being worked].—U. S. G. S. Bull. 621—K; pp 40*.

Yeatman, Pope.—*Mine of Chile Exploration Co., Chuquicamata, Chile.* [A paper read before the Pan-American Scientific Cong. History, geology, ore reserves, leaching and the electric power plant are all taken up in fair detail].—E. & M. J. Feb. 12 1916; p 307; pp 8*; 25c.

——— *Brazil Has Immense Bodies of Iron Ore.* [Reviews the subject from the point of ore reserves and tells the location of ore bodies and available transportation].—Mg. World Jan. 15 1916; p 123; pp 1½*; 10c.

——— *Italy's Petroleum Resources.* Rivanazzano Field is considered, with data on the present wells and prospects for further drilling].—Petro. World June 1916; p 275; pp 1; 35c.

——— *Nevada Consolidated Copper Co., Nevada.* [Abst. from annual report. Information on finances, prospecting, ore reserves, milling and smelting, mining costs and operations].—E. & M. J. April 22 1916; p 734; pp 1¼; 25c.

——— *Porcupine Crown Mines, Ltd., Ontario.* [Abst. from a company report;

costs, reserves, drilling operation and other information is given].—Canadian Mg. Jnl. May 1 1916; p 210; pp 1¾*; 35c.

——— *Profits and Ore Reserves of the Government Areas, South Africa.* [The distribution and general conditions of the government lands are given].—S. Afr. Mg. Jnl. Feb. 19 1916; p 575; pp 1¼*; 35c.

——— *Rand's Ore Reserves, South Africa.* [A compilation of official figures from annual company reports showing 90,000,000 tons in sight].—S. Afr. Mg. Jnl. April 29 1916; p 1; 35c.

——— *Ray Consolidated Copper Co., Arizona.* [Abst. from annual report. Information on mining and milling costs, reserves and production].—E. & M. J. April 22 1916; p 738; pp 1¼; 25c.

——— *Sampling and Estimating Messina Ore Reserves.* [The property is in the North Transvaal, South Africa, and the copper ores now mined run from 3 per cent to 10 per cent].—Mg. Mag. Dec. 1915; p 320; pp 2; 50c.

——— *The Broad Pass Region, Alaska.* [Conditions in this district which has the possibilities of furnishing much mineral wealth].—Mg. World Jan. 22 1916; p 166; pp 1*; 10c.

——— *Utah Copper Co., Utah.* [Abst. from annual report. Mill and mine operations are given with costs and production for the same. Figures of interest in operating and finances are also given].—E. & M. J. April 22 1916; p 733; pp 1¾; 25c.

——— *Year Book for* 1910 *of the Illinois Geological Survey.* [Includes the Administrative report and various economic geological papers].—Ill. Geol. Surv. Bull. 20; pp 165*.

DRILLING AND BORING

Ball, L. C.—*Lowmead No.* 1 *Bore and the Tertiary Oil-Shales of Baffle Creek, Australia.* [Abst. from a report of the Australian Geol. Surv.].—Queen. Govt. Mg. Jnl. Jan. 15 1916; p 13; pp 3¾*; 35c.

Brayton, C. C.—*Prospecting Before Dredging on Seward Peninsula, Alahka.* [Takes up the prospect drilling of placer ground in detail].—M. & S. P. April 29 1916; p 627; pp 5¾*; 20c.

Brown, A. M.—*Core Drilling at the Hollinger, Ontario.* [Describes their operations underground and the equipment used].—Canadian Mg. Jnl. Feb. 1 1916; p 76; pp 1¼*; 35c.

Carnahan, T. S.—*Underground Mining Method of the Utah Copper Co.* [A paper read before the A. I. M. E. methods of haulage, drilling, stoping and mining costs are given].—E. & M. J. Jan. 29 1916; p 216; pp 4¼*; 25c.

Copeland, F. W.—*A Mounted Hammer Drill for Drifting with Pneumatic Feed.* [Describes in detail post attachments for converting the hammer drill into a type operating similar to the mounted post drill except for the pneumatic instead of screw feed].—Canadian Mg. Jnl. April 15 1916; p 193; pp 3*; 35c.

Crane, Walter R.—*The Rifling of Diamond Drill Cores.* [Treats on the theory regarding the rifles on cores and concludes as a reason that they are from tortional vibrations of the rod].—Bull. A. I. M. E. May 1916; p 823; pp 11*; 35c.

DeWolfe, E. C.—*Application of Correct Methods.* [A top-cutter is most advantageous in a mine with uneven floor and roof where top-coal must be left].—Coal Age April 1 1916; p 571; pp 2¼*; 20c.

Down, T. A.—*Tin and Tungsten in Portugal.* [The results of some sampling and drilling are brought out and with them the geology is described, as also is their methods of concentration].—Mg. Mag. Jan. 1916; p 19; pp 6*; 50c.

Elmendorf, W. J.—*Cost of a Crosscut Adit.* [Excerpt from a paper in Trans. Can. Mg. Inst. The figures were obtained from the Portland Canal Tunnels, Ltd., B. C.].—E. & M. J. June 3 1916; p 987; pp ¾; 25c.

Grunow, W. R.—*Churn-Drill Prospecting at Morenci, Arizona.* [The drilling is being done by the Detroit Copper Co. Methods of operation and sampling are given. The total cost per foot, including the cost of the drill, is $3.257, without $2.048. A cost sheet is given].—E. & M. J. June 3 1916; p 5¾*; 25c.

Hall, Albert E.—*Three Shaft-Sinking Methods.* [Methods used at the Creighton and Crean Hill mines of the Canadian Copper Co. and the Dome mines of Ontario].—E. & M. J. April 29 1916; p 774; pp 1¾*; 25c.

Harris, D. M.—*Dangers of Machine Mining in Anthracite Coal.* [A paper read before Safety First Organization of the Delaware, Lackawana & Western].—Coal Age May 20 1916; p 874; pp 2¼*; 20c.

Heggem, A. G.—*The Control of Petroleum and Natural Gas Wells.* [On drilling and piping a well].—A. I. M. E. Bull. Jan. 1 1916; p 151; pp 13*; 35c.

Hicks, H. L.—*Quarrying at Rockland Lake, New York.* [The haulage, drilling and power equipment and operations are

described in a general way].—Engg. & Cont. June 7 1916; p 512; pp 1¾*; 20c.

Hirschberg, C. A. — *Bypass Around Leaky Tunnel of Catskill Aqueduct.* [The Moodna tunnel to which this was supplementary was a pressure tunnel. Methods of drilling and blasting are described].—Comp. Air Jan. 1916; p 7843; pp 4¼*; 20c.

Hirschberg, C. A.—*Speed and Economy of the Deep Hole Drill Wagon.* [Details of results obtained and methods used are given, including some figures on costs of operation].—Comp. Air June 1916; p 8003; pp 5½*; 20c.

Hirschberg, C. A.—*Subway Excavations—Yesterday and Today.* [A review on tunnel work with machine drills for the construction of subways].—Mg. World Mar. 25 1916; p 603; pp 3½*; 10c.

Hirschberg, C. A.—*Subway Excavating Revolutionized.* [From the Mg. World. In some detail gives the methods of using machine drills in this work].—Comp. Air May 1916; p 7971; pp 5*; 20c.

Horwood, E. J.—*Broken Hill Underground Mining Methods.* [Discusses methods of mining, shaft, operations, methods of supporting and timbering, ventilation, drilling and other details of interest].—A. I. M. E. Bull. Jan. 1916; p 65; pp 25*; 35c.

Kay, F. H.; White, K. D.—*Coal Resources of District VIII, Danville, Illinois.* [Geological structure and formation and detailed results of drilling and description of all the coal seams in the district covered].—Illinois Geol. Surv.; Bull. 14; pp 68*.

Kennedy, E. P.—*Machine-Drilling at Treadwell Mines, Alaska.* [A detailed account of various types of drills employed at different times in the Treadwell district, giving the use, duties and results obtained with each].—E. & M. J. April 8 1916; p 643; pp 1¼; 25c.

Key, A. Cooper.—*Dust Allaying in Rand Mines, South Africa.* [Gives detailed results and methods used for allaying the dust caused from drilling and blasting].—E. & M. J. June 17 1916; p 1065; pp 2¾*; 25c.

Liwehr, A. E.—*Die Erdölförderung aus Bohrlöchern.* [On drilling for oil and gas in Germany and nearby fields].—Zts. Zentral Verbd. Bergbau Betriebsl. Feb. 15 1916; p 45; pp 5½*; Mar. 1; p 61; pp 6¾*; Mar. 15 1916; p 77; pp 6*; $1.05.

Mackinnon, H. T.—*Some Coal-Cutting Difficulties.* [A paper read before the West Scotland branch of the Assn. of Mining Elect. Eng.].—I. & C. Tr. Rev. Mar. 17 1916; p 306; pp 2½; 35c.

McDonald, P. B.—*Drill Bits and Shanks.* [Describes and discusses several different types].—M. & S. P. Feb. 26 1916; p 312; pp 1¾*; 20c.

McDonald, P. B.—*Drilling in Narrow Stopes.* [A description of drilling operations and costs in the mines of Grass Valley, California].—M. & S. P. Jan. 1 1916; p 14; pp 3*; 20c.

McDonald, P. B.—*Mining at the Nevada Consolidated, Nevada.* [Items of financial interest from many other copper companies are spoken of. The deposit is described from a mining standpoint. The methods of timbering, haulage, drilling, etc., are described].—M. & S. P. June 10 1916; p 858; pp 4*; 20c.

Notman, Arthur.—*Costs of Churn Drilling at Sacramento Hill, Arizona.* [Abst. from the A. I. M. E. Bull. Data was obtained from operations of the Copper Queen Co., near Bisbee and are given in detail with description].—E. & M. J. Jan. 29 1916; p 226; pp 1¼; 25c.

Perry, E. H.; Locke, A.—*Interpretation of Assay Curves for Drill Holes.* [Brings up many deceptive points obtained from drill results discussing each and giving remedies for the same].—A. I. M. E. Bull. Feb. 1916; p 195; pp 7*; 35c. E. & M. J. April 22 1916; p 726; pp 2½*; 25c.

Read, R. G.—*A Plant for Thin-Seam Coal.* [Electric power is used and their methods of drilling, hauling and handling are taken up briefly].—Coal Age May 13 1916; p 830; pp 2*; 20c.

Reed, J. W.—*Methods of Mining and Preparation of Coals for Market in Inspection District No. 3.* [Mining methods, ventilation, mining machines, blasting, haulage and electricity are the principal subjects considered].—Ky. Dept. of Mines 1915; Annual Report III; pp 108*.

Rehfuss, L. A.; Rehfuss, W. C.—*Portable Mining Equipment for Prospects.* [A description of gasoline motor units for work in various capacities at prospects].—E. & M. J. June 10 1916; p 1025; pp 2¾*; 25c.

Richards, John.—*Adit Enlargement and Alignment at the Alaska Juneau.* [Jackhamers are used. Costs and details are given].—E. & M. J. June 3 1916; p 982; pp 1*; 25c.

Russell, S. R.—*Modern Quarrying.* [The bench methods and snake-hole methods are described in detail].—Dupont Mag. June 1916; p 4; pp 6*; 20c.

Sarchet, C. M.—*New Methods of Conservation.* [Treats on the subject from the viewpoint of efficient methods of drilling and operating].—Nat. Gas Feb. 1916; p 73; pp 1¼; 35c.

Spottiswood, H. — *Tempering Mine Drills.*—Comp. Air Mar. 1916; p 7934; pp 1¾; 20c.

Sullivan, J. G.—*Methods Adopted in the Construction of Rogers Pass Tunnel, British Columbia.* [A paper read before the Canadian Soc. of Civil Eng. Methods of construction are given, as well as methods of drilling and driving the tunnel].—Canadian Eng. April 20 1916; p 467; pp 2¼*; 35c.

Symons, S. W.—*Drilling Methods in Driving Six-Foot Tunnel.* [Abstracted from Engineering News].—E. & M. J. Mar. 18 1916; p 523; pp ¼; 25c. Comp. Air April 1916; p 7950; pp 2¼*; 20c.

Taylor, W. G.—*Motor Equipments for the Recovery of Petroleum.* [A detailed description of methods and practical results obtained by using the slip-ring motor for drilling, pumping, etc. Data covering horsepower required and kilowatt consumption is given].—Proc. Amr. Inst. Elect. Eng. June 1916; p 759; pp 14*; 35c.

Weeks, C. F.—*A Rock-Drill Stamp-Mill.* [The ordinary rock-drill is placed in a vertical position with the piston end in a mortar. It will handle a ton of quartz in 14 hours through a No. 1 screen].—M. & S. P. Jan. 29 1916; p 161; pp 1*; 20c.

Weston, E. M.—*Handling Rock Drills Underground on the Rand, South Africa.* [Abst. from Practical Mining on the Rand].—S. Afr. Mg. Jnl. Jan. 8 1916; p 440; pp 1; 35c.

———. *Details of Practical Mining.* [A compilation of small details as found in past issues of the E. & M. J.].—McGraw-Hill Co.; pp 544*; $5.

——— *Drill- and Tool-Sharpening Shop at the Copper Queen Mine, Arizona.* [The shop handles 1,200 pieces per day. Detailed costs and methods of operation are given which include a description of the equipment].—E. & M. J. June 24 1916; p 1099; pp 5¼*; 25c.

——— *Ford Collieries Co., New No. 3 Mine, Pennsylvania.* [After a general description of the surface equipment and power plant methods of cutting and haulage are taken up].—Elect. Mg. April 1916; p 33; pp 18*; 20c.

——— *Permissible Coal Cutters.* [Describes a cutter and casing as approved by the U. S. Bureau of Mines to be an explosion-proof machine].— Coal Age Feb. 19 1916; p 326; pp 2¼*; 20c.

——— *Porcupine Crown Mines, Ltd., Ontario.* [Abst. from a company report; costs, reserves, drilling operation and other information is given].—Canadian Mg. Jnl. May 1 1916; p 210; pp 1¾*; 35c.

——— *The Carr Bit.* [A special rock-drill bit which has increased drilling in the Calumet & Hecla properties, Michigan, 40 per cent].—Canadian Mg. Jnl. Feb. 15 1916; p 89; pp 2*; 35c.

SAMPLING

Burgess, R. J.—*Mine Sampling and Mapping.* [Describes methods for the daily sampling of mines worked on the squareset system].—E. & M. J. Mar. 25 1916; p 551; pp 1¼; 25c.

Dickenson, E. H.; Volker, H. J.—*Samples and Their Interpretation.* [Methods are herein given on methods of mapping to show the value width and tonnage of ore. Specific forms for recording and keeping data are also given in detail].—E. & M. J. May 27 1916; p 933; pp 3½*; 25c.

Down, T. A.—*Tin and Tungsten in Portugal.* [The results of some sampling and drilling are brought out and with them the geology is described, as also is their methods of concentration].—Mg. Mag. Jan. 1916; p 19; pp 6*; 50c.

Grunow, W. R.—*Churn-Drill Prospecting at Morenci, Arizona.* [The drilling is being done by the Detroit Copper Co. Methods of operation and sampling are given. The total cost per foot, including the cost of the drill, is $3.257, without $2.048. A cost sheet is given].—E. & M. J. June 3 1916; p 3¾*; 25c.

Wagner, P. A.—*Economic Geology and Mineral Industry of Southwest Africa.* [Prospecting, sampling, dredging, washing and dressing, water supply and transportation in the diamond fields of this area are reviewed].—S. Afr. Mg. Jnl. May 6 1916; p 133; pp 1; 35c.

Watts, W. L.—*The Examination of Prospects and Mines.* [A talk on what the examining engineer should do and the methods of sampling and later estimating which he should employ].—Mg. & Oil Bull. Feb. 1916; p 56; pp 2¼; 25c.

——— *Sampling and Estimating Messina Ore Reserves.* [The property is in the North Transvaal, South Africa, and the copper ores now mined run from 3 per cent to 10 per cent].—Mg. Mag. Dec. 1915; p 320; pp 2; 50c.

EXPLOSIVES AND BLASTING

Clark, H. H.; Breth, N. V.; Means, C. M.—*Shot Firing in Coal Mines by Electricity Controlled from Outside.* [Describes 9 different systems separately, be-

sides general discussion on the subject]. —U. S. Bur. of Mines Tech. Paper 108; pp 36. C. Tr. Bull. May 1 1916; p 53; pp 4; 25c.

Clevenger, G. H.—*Aluminum Dust.* [Describes the uses and manufacture of this product, which is of importance in the cyanide process and is coming into use for explosives].—M. & S. P. Jan. 22 1916; p 118; pp 1; 20c.

Fay, A. H.—*Coal Mine Fatalities in the United States,* 1915. [Besides tables and description regarding accidents lists are given of permissible explosives, electric lamps and motors, tested prior to Jan. 1, 1916].—U. S. Bur. of Mines; pp 80*; 20c.

Fay, A. H.—*Coal Mine Fatalities in the United States in March,* 1916. [A list of permissible explosives, lamps and motors tested prior to May 1, 1916, is also given]. —U. S. Bur. of Mines Monthly Statement; pp 22.

Herberle, Bergassessor. — *Erfahrungen mit dem Sprengstoff Flüssiger Sauerstoff (Flüssiger Luft) im Kalibergbau.* (Practice with liquified air and acid gases in blasting in the salt mines of Germany].—Kali Jan. 15 1916; p 17; pp 2; April 15 1916; p 113; pp 8½*; 70c.

Hicks, H. L.—*Quarrying at Rockland Lake, New York.* [The haulage, drilling and power equipment and operations are described in a general way].—Engg. & Cont. June 7 1916; p 512; pp 1¾*; 20c.

Hirschberg, C. A. — *Bypass Around Leaky Tunnel of Catskill Aqueduct.* [The Moodna tunnel to which this was supplementary was a pressure tunnel. Methods of drilling and blasting are described].—Comp. Air Jan. 1916; p 7843; pp 4¼*; 20c.

Hutton, C. E.—*Chief Sources of Accidents in the Witwatersrand Mines.* [Accidents are taken up which occurred from falling rock, explosives and the gases not removed by ventilation, shaft openings, etc.].—Jnl. of Chem., Met. & Mg. Soc. of S. Afr. Nov. 1915; p 95; pp 8½; 85c.

Key, A. Cooper.—*Dust Allaying in Rand Mines, South Africa.* [Gives detailed results and methods used for allaying the dust caused from drilling and blasting].—E. & M. J. June 17 1916; p 1065; pp 2¾*; 25c.

McDonald, P. B.—*Mining at the Nevada Consolidated, Nevada.* [Items of financial interest from many other copper companies are spoken of. The deposit is described from a mining standpoint. The methods of timbering, haulage, drilling, etc., are described].—M. & S. P. June 10 1916; p 858; pp 4*; 20c.

McDonald, P. B.—*Modern Blasting Practice.* [Details regarding the explosives used and methods of placing holes for large scale blasting at some of the copper properties in Nevada].—M. & S. P. May 27 1916; p 788; pp 2¾*; 20c.

Munroe, C. E.—*Storage and Handling of Explosives in Mines.* [A paper read before the Pan-American Scientific Soc.]. —E. & M. J. Feb. 19 1916; p 349; pp 3¾; 25c.

Reed, J. W.—*Methods of Mining and Preparation of Coals for Market in Inspection District No.* 3. [Mining methods, ventilation, mining machines, blasting, haulage and electricity are the principal subjects considered].—Ky. Dept. of Mines 1915; Annual Report III; pp 108*.

Russell, S. R.—*Modern Quarrying.* [The bench methods and snake-hole methods are described in detail].—Dupont Mag. June 1916; p 4; pp 6*; 20c.

Storm, C. G.—*The Analysis of Permissible Explosives.* [Methods of quantitative analysis and methods of testing explosives are given. The classification and properties of the explosives are treated on some in conjunction therewith].—U. S. Bur. of Mines Bull. 96; pp 88*; 25c.

Storm, C. G.; Cope, W. C.—*The Sand Test for Determining the Strength of Detonators.* [The test consists of placing the detonator in a bomb filled with sand and finding what amount of sand it will crush to a certain mesh by explosion. The results of some tests are given]—U. S. Bur. of Mines Tech. Paper 125; pp 67*; 20c.

Taylor, J. L.—*The Safe Transportation of Explosives and Other Dangerous Articles.* [A paper read before the National Exposition of Chemical Industries]. —Met. & Chem. Engg. Jan. 1 1916; p 46; pp 1; 30c.

——— *Details of Practical Mining.* [A compilation of small details as found in past issues of the E. & M. J.].—McGraw-Hill Co.; book; pp 544*; $5.

——— *Pan-American Congress, Proceedings of the Second Meeting.* [Abstracts of the more important papers read].—Mg. World Jan. 8 1916; p 63; pp 7; 10c.

SHAFTS AND SHAFT SINKING

Buffum, F. D.—*Handling Compressed Air in Shaft Sinking.* [A booster com-

pressor is employed to keep water from the air transmission line. An air injector for ventilating and a water ejector are described, besides some notes on piping in shaft work].—Coal Age June 3 1916; p 956; pp 2½*; 20c.

Elliot, H.—*Electrical Plant at Frickley Colliery, England.* [A paper read before the Assn. of Electrical Mining Eng.].—I. & C. Tr. Rev. Mar. 24 1916; p 336; pp 2½; 35c.

Hall, Albert E.—*Three Shaft-Sinking Methods.* [Methods used at the Creighton and Crean Hill mines of the Canadian Copper Co. and the Dome mines of Ontario].—E. & M. J. April 29 1916; p 774; pp 1¾*; 25c.

Hirschberg, C. A. — *Bypass Around Leaky Tunnel of Catskill Aqueduct.* [The Moodna tunnel to which this was supplementary was a pressure tunnel. Methods of drilling and blasting are described].—Comp. Air Jan. 1916; p 7843; pp 4¼*; 20c.

Horwood, E. J.—*Broken Hill Underground Mining Methods.* [Discusses methods of mining, shaft operations, methods of supporting and timbering, ventilation, drilling and other details of interest].—A. I. M. E. Bull. Jan. 1916; p 65; pp 25*; 35c.

Hutton, C. E.—*Chief Sources of Accidents in the Witwatersrand Mines.* [Accidents are taken up which occurred from falling rock, explosives and the gases not removed by ventilation, shaft openings, etc.].—Jnl. of Chem., Met. & Mg. Soc. of S. Afr. Nov. 1915; p 95; pp 8½; 85c.

Nisbet, James. — *The Sinking and Equipment of a Circular Shaft.* [A paper read before the Mining Institute of Scotland].—Coll'y Guard. April 14 1916; p 702; pp 1⅛.; 35c.

Richie, A. A.—*The Keyboard Method of Timbering.* [Drawings and description are given].—E. & M. J. Mar. 4 1916; p 438; pp 1*; 25c.

Smith, J. E.—*Concreting the Barron Shaft in Pachuca, Mexico.* [Detailed drawings and a detailed cost sheet are given, besides a description of the methods followed and peculiarities encountered].—E. & M. J. April 15 1916; p 676; pp 3½*; 25c.

Stauch, Karl.—*Selbsttätiger Schachtverschlutz mit einer Modifikation für Tonnlägige Förderung von Mehreren Horizonten und der Verschlutz des Kaindlstollens am Schneeberg in Triol.* [A safety gate automatically operated for tunnels, shafts and other haulage ways].—Montan. Rund. Jan. 1 1916; p 7; pp 3*; 35c.

Young, C. M.—*Underwood—A Modern Colliery, Pennsylvania.* [Describes the shaft arrangements and power which is both steam and electricity, besides their operation of preparing the coal for market].—Coal Age Jan. 1 1916; p 4; pp 7¼*; 20c.

——— *Concrete Shaft Lining; Development of Form Handling and Concrete Placing Methods.* [Describes these installations as found in several different mines and now in use].—Engg. & Contracting Feb. 9 1916; p 144; pp 7*; 20c.

——— *Details of Practical Mining.* [A compilation of small details as found in past issues of the E. & M. J.].—McGraw-Hill Co.; book; pp 544*; $5.

——— *Emergency Escape-Way for Mines.* [A recently patented plan. Its construction is given and detail, as is the way in which it is expected to serve as an escape-shaft].—Mg. World June 3 1916; p 1045; pp 1¼*; 10c.

——— *Shaft Signaling at Pelton Collieries, England.* [Line drawings and description of the same are given].—I. & C. Tr. Rev. April 21 1916; p 461; pp 1*; 35c.

——— *Some of the New Things in Mining in* 1915. [Editorial review of installations, such as air lifts, hoists, compressed air locomotive, hydroelectric plants, cableway for reclaiming tailings, etc.].—Mg. World Jan. 1 1916; p 44; pp 5½*; 10c.

LIGHTING

Bailey, P. S.—*Arc and Incandescent Headlights.*—Coal Age April 29 1916; p 753; pp 4¼*; 20c.

Bailey, P. S.—*Types of Arc and Incandescent Lights for Mine Locomotives.* [Many types of lights are shown and the advantages and correct uses of each dwelt on].—Mg. World May 13 1916; p 911; pp 3¼; 10c.

Chance, H. M.—*Chance Acetylene Safety Lamp.* [Is similar to the ordinary acetylene lamp, but with safety devices, including a lighter for the flame].—Coal Age April 1 1916; p 580; pp 2¾*; 20c.

Fay, A. H.—*Coal Mine Fatalities in the United States,* 1915. [Besides tables and descriptions regarding accidents lists are given of permissible explosives, electric lamps and motors, tested prior to Jan. 1, 1916].—U. S. Bur. of Mines; pp 80*; 20c.

Fay, A. H.—*Coal Mine Fatalities in the United States in March,* 1916. [A list of

permissible explosives, lamps and motors tested prior to May 1, 1916, is also given]. —U. S. Bur. of Mines Monthly Statement; pp 22.

Hardwick, F. W.—*The History of the Safety Lamp.* [A paper read before the Inst. of Mining, London].—Coll'y Guard. June 9 1916; p 1087; pp 1½; 35c.

Thomas, T. J.—*Firedamp Detectors for Miners' Safety Lamps.* [A number of tests made by use of platinum wire and electricity. The results are given].—Coll'y Guard. April 28 1916; p 799; pp 1½*; 35c.

——— *Cost of Upkeep of Electric Safety Cap Lamps.* [Gives details of cost for a plant handling 250 lamps per day]. —Coal Age Mar. 11 1916; p 453; pp 1½*; 20c.

TELEPHONES AND SIGNALING

Green, Harold.—*Principles of Visual Signalling.* [A paper read before the Manchester Mg. & Geol. Soc. Many points on hoist signals are brought out, but the paper was intended to promote discussion].—Colly. Guard. Dec. 24 1915; p 1288; pp 1; 35c.

Wolf, W.—*Neuere Leonardschaltungen in Bergwerken.* [Describes a new installation of electric hoists with safety and signaling equipment.—Kali Jan. 1 1916; p 4; pp 7½*; 35c.

Young, C. M.—*Cave at the Prospect Colliery, Pennsylvania.* [The roof caved and a directly overhead stream flowed into the mine. The accident is described and also the method for handling the trouble].—Coal Age Feb. 26 1916; p 373; pp 2¼*; 20c.

——— *A. T. M. Winding Signal Indicator.* [A paper read before the Assn. of Mining Electrical Eng. The indicator is of the luminous type].—I. & C. Tr. Rev. Feb. 25 1916; p 211; pp ⅜*; 35c.

——— *Battery Signaling Bells.* [A paper read before the Assn. of Mining and Electrical Eng., England].—I. & C. Tr. Rev. Jan. 7 1916; p 2; pp 1; 35c.

——— *Visual Signalling.* [A paper read before the Manchester Geological and Mining Society].—I. & C. Tr. Rev. Jan. 7 1916; p 10; pp 1; 35c.

PUMPS AND PUMPING

Beckett, P. G.—*The Water Problem at the Old Dominion Mine, Arizona.* [Geology is described as related to water seepage. Pumping, including air-lifts, is then taken up and systems and methods of detailed operations described].—Bull. A. I. M. E. April 1916; p 679; pp 32; 35c.

Bulkley, Norman.—*Application of Electric Power to Mining Work in the Witwatersrand Area, South Africa.* [A complete description of the use of electricity for crushing, milling, air compressing, hoisting, etc. A comparison is made between the steam and electric power cost and charts and drawings of arrangements are given].—A. I. M. E. Bull. Feb. 1916; p 355; pp 19*; 35c. S. Afr. Mg. Jnl. Mar. 25 1916; p 694; pp 1; April 1 p 13; pp 1; 70c.

Cornet, F. C.—*Effect of Barometric Pressure to Derange or Stop Ventilation.* [Discusses many points, among which is a statement that a fall in the pressure causes an outflow of gases from the mine waste].—Coal Age Jan. 22 1916 p 159; pp 1¾; 20c.

Guy, Albert E.—*Pumping Installations in Leadville, Colo.* [Details of tests and methods of operation for pumping in the district. Direct connected, multi-stage and other types are used].—Mg. World Jan. 22 1916; p 159; pp 3½*; 10c.

Legrand, C.—*Pumps for Mines.* [A paper read before the A. I. M. E.].—M. & S. P. Mar. 11 1916; p 379; pp 1¾; 20c.

Mathieson, G.—*Mine Drainage.* [A paper read before the Ipswich and District Mining Inst. treating on the handling of mine waters by pumps of several types and other methods].—Queen. Govt. Mg. Jnl. Feb. 15 1916; p 62; pp 4½; 35c.

O'Connell, J. J.—*How Two Pumps Effected Cost Saving and Efficiency.* [Shows that the centrifugal pump is most favorable].—Coal Age April 1 1916; p 567; pp 1¾*; 20c.

Saunders, W. L.—*Lifting Ground Water by Compressed Air.* [A paper read before the Pan-American Scientific Congress, which is very complete].—Comp. Air Jan. 1916; p 7850; pp 9*; 20c.

Sherman, G. F. G.—*Round Rope on Grooved Drums Now Used at the Copper Queen Mine.* [Abst. from a paper read before the A. I. M. E., giving detailed information on the use of the same].—Mg. World Jan. 8 1916; p 73; pp 1¼*; 10c.

Streeter, W. E.—*Steam-Turbine-Driven Centrifugal Pumps.* [Gives detailed information on the De Laval pumps recently installed at a pumping station near Montreal, Quebec].—Mg. World April 14 1916; p 829; pp 1¾*; 10c.

Thomas, D. E.—*Value of the Experimental Fan in the Mining Laboratory.* [Abst. of a paper read before the Man-

chester Geol. & Mg. Soc.].—I. & C. Tr. Rev. Jan. 14 1916; p 31; pp 1½. Coll'y Guard. Jan. 14; p 69; pp 1⅛; 35c.

Watts, A. S.—*The Feldspars of the New England and North Appalachian States.* [Contains description of the geology and separate descriptions of the quarries. Tests for the feldspar are given, as are methods of quarrying, pumping, crushing, concentration, etc.].—U. S. Bur. of Mines Bull. 92; pp 181*; 35c.

Young, C. M.—*Cave at the Prospect Colliery, Pennsylvania.* [The roof caved and a directly overhead stream flowed into the mine. The accident is described and also the method for handling the trouble].—Coal Age Feb. 26 1916; p 373; pp 2¼*; 20c.

——— *Air Lift Pumping.* [Gives many points of detailed interest and a general review of the subject].—Pract. Eng. Jan. 1 1916; p 63; pp 4½*; 60c.

——— *Annan River Company's Pumping Plant, Cooktown Tinfields.* [Detailed figures are given on this pump for a tin-dredging proposition in Queensland].—Queen. Govt. Mg. Jnl. April 15 1916; p 161; pp 1*; 35c.

——— *Devices That Increase Efficiencies in Mines.* [A talk on various equipment for repairing water and compressed air line leaks and special joints for the same].—Mg. World Jan. 8 1916; p 79; pp 1½*; 10c.

——— *Direct-Acting Duplex Pumps.* [Information on the construction, use and care of this type].—Pract. Eng. Jan. 1 1916; p 21; pp 6*; 60c.

——— *Dredging Operations at the Beginning of* 1916. [An editorial review of operations during the year 1915 and a table of the dredging companies of the world, giving headquarters, location of dredge and make, with bucket capacity].—Mg. World Jan. 1 1916; p 32; pp 12½*; 10c.

——— *Power-Driven Pumps.* [Several types and makes are described].—Pract. Eng. Jan. 1 1916; p 27; pp 9½*; 60c.

——— *Principles of Reciprocating Steam Pumps.* [A practical review of important points].—Pract. Eng. Jan. 1 1916; p 2; pp 3*; 50c.

——— *Pump Capacities.* [Points out places where the capacity is made less and gives information and curves for computing capacity].—Pract. Eng. Jan. 1 1916; p 5; pp 4½*; 60c.

——— *Single Cylinder, Steam Ends.* [A general discussion and review of the pump].—Pract. Eng. Jan. 1 1916; p 15; pp 6¼*; 60c.

——— *Some of the New Things in Mining in* 1915. [Editorial review of installations, such as air lifts, hoists, compressed air locomotive, hydroelectric plants, cableway for reclaiming tailings, etc.].—Mg. World Jan. 1 1916; p 44; pp 5½*; 10c.

——— *Stripping the Hillcrest Mine with a Sand Pump in Minnesota.* [Centrifugal sand and water pumps were used with electric power. The area stripped was 1000 by 200 ft. and 65 ft. deep].—E. & M. J. Jan. 29 1916; p 211; pp 4¼*; 25c.

TUNNELS AND TUNNELING

Brown, H. P.—*Method of Relining a Tunnel with Steam Jetted Concrete.* [Contains complete details regarding operations and mixing of the cement and concrete].—Engg. & Contracting Feb. 23 1916; p 181; pp 1¼*; 20c.

Cameron, W. G.—*Use of Compressed Air in Toronto Sewer Construction.* [Describes the methods of tunneling and gives costs of operating the compressed air plant].—Canadian Eng. Mar. 2 1916; p 295; pp 5¾*; 35c.

Comstock, A. E.—*Pneumatic Concrete Mixing, Conveying and Placing.* [Abst. of a paper read before the American Concrete Inst.].—Comp. Air. May 1916; p 7982; pp 2½*; 20c.

Elliot, H.—*Electrical Plant at Frickley Colliery, England.* [A paper read before the Assn. of Electrical Mining Eng.].—I. & C. Tr. Rev. Mar. 24 1916; p 336; pp 2⅛; 35c.

Elmendorf, W. J.—*Cost of a Crosscut Adit.* [Excerpt from a paper in Trans. Can. Mg. Inst. The figures were obtained from the Portland Canal Tunnels, Ltd., B. C.].—E. & M. J. June 3 1916; p 987; pp ¾; 25c.

Hirschberg, C. A. — *Bypass Around Leaky Tunnel of Catskill Aqueduct.* [The Moodna tunnel to which this was supplementary was a pressure tunnel. Methods of drilling and blasting are described].—Comp. Air Jan. 1916; p 7843; pp 4¼*; 20c.

Hirschberg, C. A.—*Subway Excavations—Yesterday and Today.* [A review on tunnel work with machine drills for the construction of subways].—Mg. World Mar. 25 1916; p 603; pp 3½*; 10c.

Hirschberg, C. A.—*Subway Excavating Revolutionized.* [From the Mg. World. In some detail gives the methods of using machine drills in this work].—Comp. Air May 1916; p 7971; pp 5*; 20c.

Hoff, O.—*Design and Fabrication of the Tubes for the Harlem Four-Track*

Subway Tunnel, New York. [Extract from a paper in the proceedings of the Engineers' Society of Western Pennsylvania].—Engg. & Cont. June 7 1916; p 520; pp 2*; June 14; p 595; pp 3; 40c.

Keifer, H. N.—*Electricity in the Mining Industry—Mining Telephone Equipment.* [Describes the operation of a system in detail, including the various apparatus used and different methods of installation possible].—Mg. Engg. & Elect. Rec. Feb. 1916; p 5; pp 4¾*; 35c.

Kreutzberg, E. C.—*Casting Iron Segments for New York Tunnels.* [Describes their manufacture by jar-ramming molding machines].—Foundry; p 127; pp 5½*; 25c.

Kreutzberg, E. C.—*Making Iron Segments for Tunnels.* [Describes the method by which these iron tunnel supports are cast].—I. Tr. Rev. April 20 1916; p 861; pp 5½*; 25c.

Marshall, M. H.—*Notes on Tunnel Survey Work.* [Methods of determination for lines connecting shafts and separate underground tunnels].—Canadian Eng. Feb. 10 1916; p 237; pp 3½*; 35c.

Murphy, R. E.—*Tapping a Lake for Hydro-Electric Power in Alaska.* [A tunnel was run to connect underneath the lake by the Alaska Gastineau Co., and thus furnish a water-head for power].—Mg. World April 22 1916; p 778; pp 1; 10c.

Richards, John.—*Adit Enlargement and Alignment at the Alaska Juneau.* [Jackhamers are used. Costs and details are given].—E. & M. J. June 3 1916; p 982; pp 1*; 25c.

Sullivan, J. G.—*Methods Adopted in the Construction of Rogers Pass Tunnel, British Columbia.* [A paper read before the Canadian Soc. of Civil Eng. Methods of construction are given as well as methods of drilling and driving the tunnel].—Canadian Eng. April 20 1916; p 467; pp 2¼*; 35c.

Symons, S. W.—*Drilling Methods in Driving Six-Foot Tunnel.* [Abstracted from Engineering News].—E. & M. J. Mar. 18 1916; p 523; pp ¾; 25c.

Symons, S. W.—*Small Drills for a Small Tunnel.* [From Engineering News. The tunnel was 900 ft. in granite and 5 by 6 ft. section].—Comp. Air April 1916; p 7950; pp 2¼*; 20c.

——— *Details of Practical Mining.* [A compilation of small details as found in past issues of the E. & M. J.].—McGraw-Hill Co.; pp 544*; $5.

——— *Electric Power for Public Works as Brought Out at the Wilson Ave. Tunnel, Chicago.* [A complete description of electric power used in the tunnel is given. Electricity is here used for hoisting, air compression, rock crushing, haulage, ventilation and lining the tunnel with concrete].—Elect. Rev. & West. Elect. June 3 1916; p 1017; pp 6¾*; 20c.

——— *Shaft Signaling at Pelton Collieries, England.* [Line drawings and description of the same are given].—I. & C. Tr. Rev. April 21 1916; p 461; pp 1*; 35c.

MINE WATERS

Beckett, P. G.—*The Water Problem at the Old Dominion Mine, Arizona.* [Geology is described as related to water seepage. Pumping, including air-lifts, is then taken up and systems and methods of detailed operations described].—Bull. A. I. M. E. April 1916; p 679; pp 32*; 35c. E. & M. J. May 13 1916; p 859; pp ¾*; 25c.

Mathieson, G.—*Mine Drainage.* [A paper read before the Ipswich and District Mining Inst. treating on the handling of mine waters by pumps of several types and other methods].—Queen. Govt. Mg. Jnl. Feb. 15 1916; p 62; pp 4½; 35c.

MINE GAS

Burrell, G. A.; Gauger, A. W.—*The Composition of the Rock Gas of the Cripple Creek Mining District, Colorado.* [Published by permission of the Director of the U. S. G. S. Analyses are given of the gases which are supposed to emanate from the last of the now extinct Cripple Creek volcano].—Bull. A. I. M. E. May 1916; p 843; pp 21; 35c.

Irvine, L. G.—*Accidents from Poisonous Asphyxiating Gases in Mines.* [Abst. from an article in the Medical Journal of South Africa].—Coll'y Guard. April 7 1916; p 653; pp 2; 35c.

Irvine, L. G.—*First-Aid Treatment of Cases of Gas Poisoning.* [Abst. from the Medical Jnl. of S. Afr.].—E. & M. J. May 20 1916; p 901; pp 1; 25c.

VENTILATION

Buffum, F. D.—*Handling Compressed Air in Shaft Sinking.* [A booster compressor is employed to keep water from the air transmission line. An air injector for ventilating and a water ejector are described, besides some notes on piping in shaft work].—Coal Age June 3 1916; p 956; pp 2½*; 20c.

Elliot, H.—*Electrical Plant at Frickley*

Colliery, England. [A paper read before the Assn. of Electrical Mining Eng.].—I. & C. Tr. Rev. Mar. 24 1916; p 336; pp 2⅛; 35c.

Horwood, E. J.—*Broken Hill Underground Mining Methods.* [Discusses methods of mining, shaft operations, methods of supporting and timbering, ventilation, drilling and other details of interest].—A. I. M. E. Bull. Jan. 1916; p 65; pp 25*; 35c.

Hutton, C. E.—*Chief Sources of Accidents in the Witwatersrand Mines.* [Accidents are taken up which occurred from falling rock, explosives and the gases not removed by ventilation, shaft openings, etc.].—Jnl. of Chem., Met. & Mg. Soc. of S. Afr. Nov. 1915; p 95; pp 8½; 85c.

Saxon.—*Mine Ventilation.* [Confined to coal mining operations with explanation of formulae and theory].—Sci. & Art of Mg. Jan. 29 1916; p 290; pp 2½*; 35c.

Shanks, John.—*Notes on Mine Ventilation.* [Abst. from the Canadian Mining Inst. Bull.].—Coll'y Guard. Jan. 21 1916; p 131; pp 1*; 35c.

Valiquet, H. H.—*Important Features in Mine-Ventilating Fans.* [Methods for figuring new systems and for determining new additions to installed systems].—Coal Age Jan. 15 1916; p 123; pp 2*; 20c.

——— *Electric Power for Public Work as Brought Out at the Wilson Ave. Tunnel, Chicago.* [A complete description of electric power used in the tunnel is given. Electricity is here used for hoisting, air compression, rock crushing, haulage, ventilation and lining the tunnel with concrete].—Elect. Rev. & West. Elect. June 3 1916; p 1017; pp 6¾*; 20c.

——— *Re-Arrangement of the Ventilation System of the Wallsend and Hebburn Collieries, England.*—I. & C. Tr. Rev. May 19, 1916; p 576; pp 2⅓* 35c.

SUPPORTS: PROPS, PILLARS, TIMBERS, STOWING, ETC.

Angier, F. J.—*Wood Preservation.* [A paper read before the Baltimore & Ohio Operating Officers]. — Wood-Preserving Dec. 1915; p 72; pp 2; 35c.

Carnahan, T. S.—*Underground Mining Methods of Utah Copper Co., Utah.* [Describes the geology of the body, methods of stoping, construction of chutes, haulage, costs, supports, etc.].—A. I. M. E. Bull. Jan. 1916; p 51; pp 14*; 35c.

Cherrington, F. W.—*Creosoted Piling and Poles.* [Costs, description of methods and advantages obtained by the treatment are spoken of].—Amer. Wood Preservers' Assn. Report 1916; p 61; pp 9½* 35c.

Dakin, W.—*Controlling Roof Weights.* [A paper read before the National Assn. of Colly. Mgr., England, being confined to the mining of coal seams].—I. & C. Tr. Rev. Dec. 31 1915; p 812; pp 3*; 35c.

Goss, O. P. M.—*Methods of Creosoting Douglas Fir Timbers.* [A brief detailed description of the methods. with tables showing the effects of such treatment].—Amer. Wood Preservers' Assn. 1916 Report; p 70; pp 15½*; 35c.

Goltra, W. F.—*Quantity of Zinc Chloride Per Tie or Per Cubic Foot of Timber and Method of Determining the True Strength of the Solution.*—Amer. Wood Preservers' Assn. 1916 Report; p 109; pp 8¼; 35c.

Groom, Percy.—*Pit Timber and Its Preservation.* [A paper read before the Midland Inst. of Mining, Civil and Mechanical Engineers].—Coll'y Guard Mar. 24 1916; p 554; pp 1½*. I. & C. Tr. Rev. Mar. 24 1916; p 330; pp 1⅔; 35c.

Hirschberg, C. A.—*Subway Excavating Revolutionized.* [From the Mg. World. In some detail gives the methods of using machine drills in this work].—Comp. Air May 1916; p 7971; pp 5*; 20c.

Horwood, E. J.—*Broken Hill Underground Mining Methods.* [Discusses methods of mining, shaft operations, methods of supporting and timbering, ventilation, drilling and other details of interest].—A. I. M. E. Bull. Jan. 1916; p 65; pp 25*; 35c.

Kreutzberg, E. C.—*Casting Iron Segments for New York Tunnels.* [Describes their manufacture by jar-ramming molding machines].—Foundry; p 127; pp 5½*; 25c.

Kreutzberg, E. C.—*Making Iron Segments for Tunnels.* [Describes the method by which these iron tunnel supports are cast].—I. Tr. Rev. April 20 1916; p 861; pp 5½*; 25c.

Mitchell, W. G. — *An Experimental Wood-Preserving Laboratory.* [A general description of a plant for testing with some details of the equipment].—Wood-Preserving June 1916; p 33; pp 3*; 35c.

Richie, A. A.—*The Keyboard Method of Timbering.* [Drawings and description are given].—E. & M. J. Mar. 4 1916; p 438; pp 1*; 25c.

Wetzel, W. N.—*Methodical Pillar Drawing.*—Coal Age Mar. 25 1916; p 535; pp 3½; 20c.

——— *Details of Practical Mining.*

[A compilation of small details as found in past issues of the E. & M. J.].—McGraw-Hill Co.; pp 544*; $5.

——— *Non-Pressure Treatment of Timber.*—Wood Preserving Dec. 1915; p 78; pp 1; 35c.

——— *Report of Committee on Specifications for the Purchase and Preservation of Treatable Timber.*—Amer. Wood Preservers' Assn. 1916 Report; p 171; pp 16; 35c.

——— *Treating Ties for the G. R. & I., I. P. L. and P. M. Railroads.* [A brief description of the plant's equipment and a general description of their operations].—Wood-Preserving June 1916; p 27; pp 2¼*; 35c.

HOISTS AND HOISTING

Anslow, Frank.—*Types of Modern Electric Winding.* [A paper read before the Assn. of Mining Elect. Eng. containing diagram drawings].—I. & C. Tr. Rev. Mar. 31 1916; p 368; pp 3*; 35c.

Baechtold, C. A.—*New Handling Plant of the Temescal Rock Co., Corona, Cal.* [Storage hoisting, crushing and haulage of the rock are described in fair detail].—Mg. World Mar. 18 1916; p 557; pp 2½*; 10c.

Bulkley, Norman.—*Application of Electric Power to Mining Work in the Witwatersrand Area, South Africa.* [A complete description of the use of electricity for crushing, milling, air compressing, hoisting, etc. A comparison is made between the steam and electric power costs, and charts and drawings of arrangements are given].—A. I. M. E. Bull. Feb. 1916; p 355; pp 19*; 35c. S. Afr. Mg. Jnl. April 29 1916; p 112; pp 1; 35c.

Burch, H. K.; Whiting, M. A.—*Automatic Operation of Mine Hoists as Exemplified by the New Electric Hoists for the Inspiration Consolidated Copper Co., Arizona.* [A complete description of the plant and peculiarities noted].—Bull. A. I. M. E. Mar. 1916; p 583; pp 14*; 35c. Coll'y Guard. April 20 1916; p 751; pp 1½*; 35c.

Burns, D.—*Electric Winding.* [A paper read before the Assn. of Mining Electrical Engineers, England. Theories for making computations in this class of work are given].—I. & C. Tr. Rev. Feb. 25 1916; p 205; pp 2*; 35c.

Hyde, M. L.—*Opening Shaft Mines.* [Many suggestions on this method of working coal mines are given and two complete arrangements for the bottom are given].—Coal Age May 27 1916; p 910; pp 3¾*; 20c.

McDonald, P. B.—*Notes from Grass Valley, California.* [Drawings of the North Star mine's head-frame and engine house are given].—M. & S. P. Mar. 1916; p 343; pp 3*; 20c.

Miller, R. G.—*Simplicity in Tipple Design.* [Drawings and description for the construction of the same are given].—Coal Age Jan. 29 1916; p 196; pp 2¼* 20c.

Moeller, Franklin.—*The New Electric Hoist of the North Butte Mining Co., Montana.* [Methods used in calculating the equipment and a description of the equipment are all given].—A. I. M. E. Bull. Feb. 1916; p 343; pp 12*; 35c.

Nordberg, G. E.—*Hoist for Elm Orlu Mining Co., Montana.* [The clutches are engine operated and the hoist is equipped with many new safety devices].—E. & M. J. Feb. 5 1916; p 256; pp 1½; 25c.

Ross, W.—*The Use of Wire-Rope Guides for Pit Cages.* [A paper read before the National Assn. of Colliery Managers, Scotland].—I. & C. Tr. Rev. Mar. 17 1916; p 295; pp 2*; 35c.

Rowland, G. R.—*Wire Rope Lubrication.* [Points out the more particular qualities which a lubricant for this purpose should have].—Coal Age May 6 1916; p 789; pp 1¾; 20c.

Steelman, J.—*The Wire Rope and the Coal Mine.* [A general detailed discussion on the proper kinds of rope for different uses, such as hoisting, haulage, guying, aerial tramways, etc.].—Coal Age June 24 1916; p 1082; pp 5½*; 20c.

Stone, F. L.—*Mine Hoist Calculations.* [A balanced slope haulage engine operating gunboats is the type considered, and details and theory for making computations given].—Coal Age May 27 1916; p 923; pp 3¾*; 20c.

Taylor, M. T. — *Lowering Horses Through a Small Shaft.* [Describes a system for bundling the horse with rope and then lowering].—Mg. Mag. Jan.1916; p 28; pp 2*; 50c.

Whiting, M. A.; Burch, H. K.—*Automatic Operation of Electric Mine Hoists at the Inspiration Mine, Arizona.* [A paper read before the A. I. M. E.; deals with the theoretical practice involved there].—Mg. World Mar. 11 1916; p 515; pp 2*; April 1 1916; p 649; pp 3¾*; 20c.

Wolf, W.—*Neuere Leonardschaltungen in Bergwerken.* [Describes a new installation of electric hoists with safety and signaling equipment].—Kali Jan. 1 1916; p 4; pp 7½*; 35c.

Yates, B. C.—*New Construction Work at the Homestake, South Dakota.* [A brief but detailed description of the new

steam auxiliary electric station and skip hoist. The central steam plant, electric generating plant and hoist are included].—Pahasapa June 1916; p 31; pp 4; 30c.

——— *A. T. M. Winding Signal Indicator.* [A paper read before the Assn. of Mining Electrical Eng. The indicator is of the luminous type].—I. & C. Tr. Rev. Feb. 25 1916; p 211; pp ⅝*; 35c.

——— *Electric Power for Public Work as Brought Out at the Wilson Ave. Tunnel, Chicago.* [A complete description of electric power used in the tunnel is given. Electricity is here used for hoisting, air compression, rock crushing, haulage, ventilation and lining the tunnel with concrete].—Elect. Rev. & West. Elect. June 3 1916; p 1017; pp 6¾*; 20c.

——— *Safety Device for Chairing Cages.* [A device for locking cars on the cage, consisting essentially of a bar across the open side].—Anode April 1916; p 2; pp 1¼*; 20c.

——— *Some of the New Things in Mining in* 1915. [Editorial review of installations, such as air lifts, hoists, compressed air locomotive, hydroelectric plants, cableway for reclaiming tailings, etc.].—Mg. World Jan. 1 1916; p 44; pp

——— *The New Man Hoist at the Inspiration Con. Copper Co., Arizona.* [The hoist has a double-decked cage and is something similar to the elevators of big buildings].—Mg. World Mar. 18 1916; p 561; pp 1¾*; 10c.

DREDGING

Alderson, M. W.—*Mining Possibilities in Colombia, South American.* [Considerable of the article is on gold dredging operations and the general conditions surrounding the same in that country].—Mg. World May 20 1916; p 947; pp 3½*; 10c.

Alderson, M. W.—*Mining Possibilities in Colombia, South America—II.* [A general talk on mining in this well-known, old country. Placers are the principal deposits considered].—Mg. World June 10; p 1075; pp 2¾*; 10c.

Alderson, M. W.—*Mining Possibilities in Colombia, S. A.* [A description of the alluvial deposits is given with details of operation at several properties. In discussing the good points and faults items of financial interest, production figures and costs are brought out].—Mg. World June 24 1916; p 1169; pp 3*; 10c.

Brayton, C. C.—*Prospecting Before Dredging on Seward Peninsula, Alaska.* [Takes up the prospect drilling of placer ground in detail].—M. & S. P. April 29 1916; p 627; pp 5¾*; 20c.

Condee, A. J.—*The Derry Ranch Gold Dredge.* [A general description of the dredge and its operations].—Mg. & Oil Bull. Feb. 1916; p 53; pp 1*; 25c.

Cranston, R. E.—*Gold Dredging in* 1915. [A review of operations in the more important districts during the year].—E. & M. J. Jan. 8 1916; p 100; pp 2½; 25c.

Earl, T. C.—*The Gold Placers of Northwest Spain.* [Describes attempts which were made at working on the Sil river].—Technical Bookshop, London; book; pp 28*; $1.50.

Eddy, L. H.—*A California Dredge with Two Tailings Stackers.* [A new method for reclaiming dredged ground for agricultural uses].—E. & M. J. Jan. 22 1916; p 169; pp 3½*; 25c.

Eddy, L. H.—*Jigs on a California Dredge.* [Hardinge mills and Neill jigs are used here, with the latter placed in the sluices, and they have shown an advance in this kind of mining, as well as a saving].—E. & M. J. Jan. 29 1916; p 208; pp 1¾*; 25c.

Esteep, H. Cole.—*Iron Range Developments in* 1915. [A review of operations in northern Michigan, Minnesota and Wisconsin, with a brief on the war's effects on labor].—I. Tr. Rev. Jan. 6 1916; p 81; pp 13½*; 60c.

Fowler, Frank.—*Mining in British Guiana.* [Abst. from a report of the Commissioner of Land and Mines. Hydraulicking and dredging for gold and diamonds is reviewed and production figures given].—E. & M. J. April 22 1916; p 725; pp 1½; 25c.

Hill, J. M.—*Working the Beach Sands of Snake River, Idaho.* [Abst. from bulletin 620-L, U. S. G. S.].—Mg. World Mar. 25 1916; p 607; pp 1¾*; 10c.

Hutchins, J. P.—*Mining in the Russian Empire,* 1915. [Deals with dredging operations; the production of gold, platinum, petroleum, etc.; and labor conditions].—E. & M. J. Jan. 8 1916; p 124; pp 2½; 25c.

Jacobs, E.—*Placer Gold Mining in British Columbia.* [A review of the production of gold from this source in general for the province and detail for the different sections].—Canadian Mg. Jnl. June 1 1916; p 274; pp 2¾; 35c.

Lee, C. F.—*Some Hydraulic Mining Problems.* [Abst. of a paper read before the A. I. M. E. Costs, difficulties and details of operation in the Atlin district, B. C., are given. Detailed data and information regarding sluicing are includ-

ed].—Mg. World June 24 1916; p 1181; pp 1*; 10c.

MacDonald, J. A.—*Bench Claims in the Yukon, Alaska.* [Describes the law regarding the location, size, etc., of this kind of claim].—E. & M. J. April 22 1916; p 722; pp 1*; 25c.

Marliere, De La, E. C.—*Dredging in Mozambique, Rhodesia.* [Speaks of the industry in general and briefly describes some of the methods used].—E. & M. J. April 15 1916; p 673*; pp 2¼*; 25c.

McDonald, J. A.—*Remedies for Incongruities of Yukon Placer Regulations.* [Takes up the law regarding the placer claim, size, location, etc.].—E. & M. J. May 6 1916; p 806; pp 1; 25c.

McKirahan, S.—*Mining in Surinam, Dutch Guiana.* [Placer gold is found here. The article gives a good general description of the deposits and industry in general].—Pahasapa Qt'ly April 1916; p 26; pp 3¼; 50c.

Nicholls, H. E.—*A Pioneer Bucket Dredge in Northern Nigeria.* [A general description of dredging these tin deposits is given, with a description of the type of combustion engine used and miscellaneous mining costs].—Mg. World April 8 1916; p 691; pp 3½*; 10c.

Rose, T. K.—*The Metallurgy of Gold.* [Separate chapters take up subjects related to gold as: methods of extraction, concentration, alloys, chemistry, placer deposits, crushing, geology, assaying, etc. Reasons for rather than a bare explanation is the policy].—J. B. Lippincott Co.; pp 601*; book; $6.50.

Smith, H. D.—*Natomas and Re-Soiling.* [Correspondence notes on the operation of gold dredges by the Natomas Con. Co., Cal.].—M. & S. P. Mar. 18 1916; p 397; pp 1*; 20c.

Thomas, C. A.—*Lübecker Excavator in the Klondike, Aslaska.* [This dredge is to be tried by the Northwest Corp. It is a chain-bucket excavator heretofore used in digging brown coal in Germany. A special design has been made to act as a good dredge here].—E. & M. J. June 17 1916; p 1057; pp 2¾*; 25c.

Wagner, P. A.—*Economic Geology and Mineral Industry of Southwest Africa.* [Prospecting, sampling, dredging, washing and dressing, water supply and transportation in the diamond fields of this area are reviewed].—S. Afr. Mg. Jnl. May 6 1916; p 133; pp 1; 35c.

——— *Annan River Company's Pumping Plant, Cooktown Tinfields.* [Detailed figures are given on this pump for a tin-dredging proposition in Queensland].—Queen. Govt. Mg. Jnl. April 15 1916; p 161; pp 1*; 35c.

——— *Bucket Dredging in Northern Nigeria.* [Some details are given in this general description of placer tin-dredging].—S. Afr. Engg. April 1916; p 63; pp 1*; 35c.

——— *Dredging in Mozambique, East Africa.* [Details are given on the costs of operation and results obtained. Blasts are made in the bucket which lasted a year with 5625 blasts].—M. & S. P. Jan. 8 1916; p 43; pp 1*; 20c.

——— *Mining in the Philippine Islands.* [Gold mining and dredging are carried on. The new Benguet mill, which will use the sliming cyanide process and be operated by electricity, is described].—Mex. Mg. Jnl. Jan. 1916; p 13; pp 1½; 35c.

——— *The Union Tin Industry in 1915, South Africa.* [Gives the operation of companies and cost of tin plant in these placer fields].—S. Afr. Mg. Jnl. Dec. 18 1915; p 367; pp 1; 35c.

POWER SHOVELS AND EXCAVATORS

Armstrong, F. H.—*An Electro-Hydraulic Shovel.* [In operation in the iron mines of northern Michigan and operated by electric power with certain hydraulic features. It is similar to the steam shovel in common use there].—A. I. M. E. Bull. Feb. 1916; p 203; pp 7*; 35c. I. Tr. Rev. Feb. 17 1916; p 393; pp 2½*; 25c.

Crawford, G. N., Jr.—*The Drag Line Excavator in Greater Demand in Mining Work.* [A general talk on excavators of this type].—Mg. World Mar. 25 1916; p 599; pp 2½*; 10c.

Helms, D. C.—*Mining the Mammoth Vein with Steam Shovels.* [Describes the method at the Nesquehoning colliery, Pennsylvania. Considerable virgin and pillar coal was obtained].—Coal Age Feb. 19 1916; p 322; pp 3½*; 20c.

Hirschberg, C. A.—*Speed and Economy of the Deep Hole Drill Wagon.* [Details of results obtained and methods used are given, including some figures on costs of operation].—Comp. Air June 1916; p 8003; pp 5½*; 20c.

Kellogg, L. O.—*Stripping the Overburden in Openpit Mining.* [A general review of the subject, taking copper and iron deposits into consideration mostly].—Engg. Mag. Mar. 1916; p 896; pp 14*; 35c.

Nicholls, H. E.—*A Pioneer Bucket Dredge in Northern Nigeria.* [Placer

is mined, and semi-Diesel engines used for power. Details of mining costs are given].—Bull. Inst. of Mg. & Met., London, No. 137; pp 13*; 50c.

Singewald, J. T., Jr.; Miller, B. L.—*Mining in Oriente Province, Cuba.* [A general description of the country and geology is given. Copper and iron mines are operated. Open-pit methods and flotation treatment of ores are used].—E. & M. J. April 1 1916; p 587; pp 6*; 25c.

Sperr, F. W.—*Stoping Methods.* [Answers to various questions in regard to mining methods, such as top-slicing, square-set system, etc.].—M. & S. P. Feb. 19 1916; p 265; pp 4¾*; 20c.

Stone, S. R.—*Cableway of Asbestos Corporation of Canada.* [Open pits are used and the material taken out by aerial trams].—Mg. World Feb. 19 1916; p 397; pp 2½*; 10c.

Thomas, C. A.—*Lübecker Excavator in the Klondike, Alaska.* [This dredge is to be tried by the Northwest Corp. It is a chain-bucket excavator heretofore used in digging brown coal in Germany. A special design has been made to act as a gold dredge here].—E. & M. J. June 17 1916; p 1057; pp 2¾*; 25c.

VanBrunt, Bradlee.—*A New Method of Stripping Iron Ore on the Mesabi Range, Minnesota.* [A new installation of the largest steam shovel capable of making a floor 128 ft. across and 61 ft. deep from one position].—Mg. World Jan. 15 1916; p 117; pp 1¾*; 10c.

Young, G. J.—*Brown-Coal Mining in Germany.* [Open pit and underground methods are used and costs are given].—A. I. M. E. Bull. Feb. 1916; p 327; pp 16*; 35c.

——— *Coal Stripping, Rush Run, Ohio.* [A description of a method by which the upper seams left before are now being taken out].—Coal Age Jan. 22 1916; p 161; pp 1½*; 20c.

——— *Digging Brick Clay with a Revolving Shovel.* [An account of handling clay from the Chicago Drainage Canal with 1½-yd. bucket].—Excavate. Eng. May 1916; p 296; pp 2*; 20c.

——— *Electric Dragline Work on the Boise Project, United States Reclamation Service, Idaho.*—Excavating Eng. April 1916; p 251; pp 4¼*; 20c.

——— *Steam-Shovel Coal Stripping in the Danville District, Illinois.* The revolving, long-boom type of shovel monopolizes the field. In one mine the property is worked for both coal and clay, the latter being used in the manufacture of brick].—Coal Age Mar. 11 1916; p 449; pp 4½*; 20c.

——— *Stripping Mesabi Deposits, Minn.* [A method employing a large steam shovel which from one position can make a floor 128 ft. across at a depth of 61 ft.].—Iron Age Jan. 13 1916; p 145; pp 1*; 30c.

——— *Stripping the Hillcrest Mine with a Sand Pump in Minnesota.* [Centrifugal sand and water pumps were used with electric power. The area stripped was 1000 by 200 ft. and 65 ft. deep].—E. & M. J. Jan. 29 1916; p 211; pp 4¼*; 25c.

——— *Types and Costs of Slack Cable Excavator Plants.* [The excavators are first briefly described and their use discussed, and this is followed by an account of operating costs, including labor].—Canadian Eng. April 6 1916; p 410; pp 1½; 35c.

HYDRAULIC MINING

Armstrong, F. H.—*An Electro-Hydraulic Shovel.* [In operation in the iron mines of northern Michigan and operated by electric power with certain hydraulic features. It is similar to the steam shovel in common use there].—A. I. M. E. Bull. Feb. 1916; p 203; pp 7*; 35c.

Ellsworth, C. E.; Davenport, R. W.; Hoyt, J. C.—*A Water Power Reconnaissance in South-Central Alaska.* [One section is given over to southeastern Alaska].—Water Supply Paper 372; pp 173*.

DeWolf, W. P.—*Revival of Placer Mining Operations in Yavapai County, Arizona.* [A review of operations in the industry. Sluicing and hydraulic work are done].—Mg. World Jan. 29 1916; p 199; pp 1¼; 10c.

Fowler, Frank.—*Mining in British Guiana.* [Abst. from a report of the Commissioner of Land and Mines. Hydraulicking and dredging for gold and diamonds is reviewed and production figures given].—E. & M. J. April 22 1916; p 725; pp 1½; 25c.

Harza, L. F.—*Report on Columbia River Power Project.* [Deals with a description of the natural hydraulic-head as limited by the backwater conditions].—Jnl. of Elect. Power & Gas Jan. 8 1916; p 33; pp 4¼*; 35c.

Lee, C. F.; Daulton, T. M.—*The Solution of Some Hydraulic Mining Problems on Ruby Creek, British Columbia.* [A general description of the gravel beds followed by a description of their methods of hydraulicking and costs of the same].—Bull. A. I. M. E. May 1916; p 835; pp 8*; 35c.

McCarty, E. P.—*Hydraulic Stripping on the Cuyuna Range, Minnesota.* [A

paper read before the L. S. M. I., giving details of construction and operation of hydraulic giants. Centrifugal and sand pumps were used and 1,500,000 cu. yds. were moved at a cost of 6.7 cts. per yard].—I. Tr. Rev. Jan. 13 1916; p 135; pp 5*; 25c.

Rose, T. K.—*The Metallurgy of Gold.* [Separate chapters take up subjects related to gold as: methods of extraction, concentration, alloys, chemistry, placer deposits, crushing, geology, assaying, etc. Reasons for rather than a bare explanation is the policy].—J. B. Lippincott Co.; pp 601*; book; $6.50.

Smith, W. J.—*Angles, Elbows and Lay-Out Construction by New Method.* [A unique method for the making of curves, etc., in any kind of pipe or flume lines in the mine, mill or smelter].—Mg. World Jan. 29 1916; p 191; pp 3¼*; 10c.

——— *Stripping the Hillcrest Mine with a Sand Pump in Minnesota.* [Centrifugal sand and water pumps were used with electric power. The area stripped was 1000 by 200 ft. and 65 ft. deep].—E. & M. J. Jan. 29 1916; p 211; pp 4¼*; 25c.

MINING COSTS

Allison, L. R. W.—*An Interesting Mines Power System.* [Describes the installation of the Arkansas Valley Light & Power Co., in conjunction with whose electric power near Pueblo, Colo., steam plants are used and mining cost reduced].—Pract. Eng. April 1 1916; p 331; pp 1*; 20c.

Brown, J. F. K.—*A Puzzle in Mining Costs.* [In thin seams neither longwall nor room and entry systems were satisfactory. Haulage was a big item and costs are given on this and other mining operations].—Coal Age Feb. 5 1916; p 246; pp 3¼*; 20c.

Carnahan, T. S.—*Underground Mining Methods of Utah Copper Co., Utah.* [Describes the geology of the body, methods of stoping, construction of chutes, haulage, costs, supports, etc.].—A. I. M. E. Bull. Jan. 1916; p 51; pp 14*; 35c. E. & M. J. Jan. 29 1916; p 216; pp 4¼*; 25c.

Clark, H. H.; Berth, N. V.; Means, C. M.—*Shot Firing in Coal Mines by Electricity Controlled from Outside.* [Four systems are described in some detail and costs for the same given].—C. Tr. Bull. May 1 1916; p 53; pp 4; 25c.

Elmendorf, W. J.—*Cost of a Crosscut Adit.* [Excerpt from a paper in Trans. Can. Mg. Inst. The figures were obtained from the Portland Canal Tunnels, Ltd., B. C.].—E. & M. J. June 3 1916; p 987; pp ¾; 25c.

Everest, H. A.—*Economies in a Small Coal Mine.* [Takes the subject from a point that there is a difference in operating costs between the large and small operator].—A. I. M. E. Bull. Jan. 1916; p 165; pp 4; 35c.

Feldtmann, W. R.—*The Mines of Ashanti Goldfields Corporation, West Africa.* [The history, methods of mining, geology and origination of the company are given. These arsenical ores must first be roasted and are then cyanided].—Mg. Mag. May 1916; p 257; pp 12*; 50c.

Finlay, J. R.—*Basic Principles of Mining Costs.* [A paper read at the Columbia School of Mines].—Queen. Govt. Mg. Jnl. Feb. 15 1916; p 72; pp 1½; 35c.

Grunow, W. R.—*Churn-Drill Prospecting at Morenci, Arizona.* [The drilling is being done by the Detroit Copper Co. Methods of operation and sampling are given. The total cost per foot, including the cost of the drill, is $3.257, without $2.048. A cost sheet is given].—E. & M. J. June 3 1916; p 5¾*; 25c.

Gudgeon, C. W.—*The Scheelite-Gold Mines of Otago, New Zealand.* [The geology is taken up and several properties described. Mill flow-sheets and milling and mining costs are given, besides a brief on a wet method for assaying pyritic scheelite for tungsten].—Proc. Aus. Inst. M. E.; N. S. No. 21 1916; p 37; pp 14*; 65c.

Higgins, W. C.—*Development and Equipment of the Walker Copper Mine, California.* [Mine development and milling operations are described. A table itemizing the production cost is also given].—S. L. Mg. Rev. Mar. 30 1916; p 11; pp 3*; 25c.

Hirschberg, C. A.—*Speed and Economy of the Deep Hole Drill Wagon.* [Details of results obtained and methods used are given, including some figures on costs of operation].—Comp. Air June 1916; p 8003; pp 5½*; 20c.

Hubbard, J. D.—*Cost of Drift-Mining.* [The figures are those obtained from an average of 1,000 shifts at the Nugget mine, California].—M. & S. P. May 27 1916; p 780; pp ¾; 20c.

Lee, C. F.—*Some Hydraulic Mining Problems.* [Abst. of a paper read before the A. I. M. E. Costs, difficulties and details of operation in the Atlin district, B. C., are given. Detailed data and information regarding sluicing are included].—Mg. World June 24 1916; p 1181; pp 1*; 10c.

Lee, C. F.; Daulton, T. M.—*The So-*

lution of Some Hydraulic Mining Problems on Ruby Creek, British Columbia. [A general description of the gravel beds followed by a description of their methods of hydraulicking and costs of the same].—Bull. A. I. M. E. May 1916; p 835; pp 8*; 35c.

McDonald, P. B.—*Drilling in Narrow Stopes.* [A description of drilling operations and costs in the mines of Grass Valley, California].—M. & S. P. Jan. 1 1916; p 14; pp 3*; 20c.

Nicholls, H. E.—*A Pioneer Bucket Dredge in Northern Nigeria.* [Placer tin is mined, and semi-Diesel engines used for power. Details of mining costs are given].—Bull. Inst. of Mg. & Met., London, No. 137; pp 13*; 50c. Mg. World April 8 1916; p 691; pp 3½*; 10c.

Notman, Arthur.—*Costs of Churn Drilling at Sacramento Hill, Arizona.* [Abst. from the A. I. M. E. Bull. Data was obtained from operations of the Copper Queen Co., near Bisbee, and are given in detail, with description].—E. & M. J. Jan. 29 1916; p 226; pp 1¼; 25c.

Richards, John.—*Adit Enlargement and Alignment at the Alaska Juneau.* [Jackhamers are used. Costs and details are given].—E. & M. J. June 3 1916; p 982; pp 1*; 25c.

Smith, J. E.—*Concreting the Barron Shaft in Pachuca, Mexico.* [Detailed drawings and a detailed cost sheet are given, besides a description of the methods followed and peculiarities encountered].—E. & M. J. April 15 1916; p 676; pp 3½*; 25c.

——— *Cost of Spur Tracks.* [The cost of tracks of several different lengths are divided and given in tabulated form].—Coal Age June 10 1916; p 998; pp ½; 20c.

——— *Drill- and Tool-Sharpening Shop at the Copper Queen Mine, Arizona.* [The shop handles 1,200 pieces per day. Detailed costs and methods of operation are given, which include a description of the equipment].—E. & M. J. June 24 1916; p 1099; pp 5¼*; 25c.

——— *Dredging in Mozambique, East Africa.* [Details are given on the costs of operation and results obtained. Blasts are made in the bucket, which lasted a year with 5625 blasts].—M. & S. P. Jan. 8 1916; p 43; pp 1*; 20c.

——— *Hollinger Costs in* 1915. [Detailed descriptive and tabulated information].—Canadian Mg. Jnl. June 1 1916; p 272; pp 2; 35c.

——— *Mining in Rhodesia.* [Mining and milling operations in the copper and gold fields, giving costs and figures on production].—E. & M. J. Jan. 15 1915; p 136; pp 1¼; 25c.

——— *Nevada Consolidated Copper Co., Nevada.* [Abst. from annual report. Information on finances, prospecting, ore reserves, milling and smelting, and mining costs and operations].—E. & M. J. April 22 1916; p 734; pp 1¼; 25c.

——— *Operation and Maintenance Cost of Aerial Tramways.* [Abst. from Aerial Tramways].—E. & M. J. June 3 1916; p 986; pp ¾; 25c.

——— *Ray Consolidated Copper Co., Arizona.* [Abst. from annual report. Information on mining and milling costs, reserves and production].—E. & M. J. April 22 1916; p 738; pp 1¼; 25c.

——— *Stripping the Hillcrest Mine with a Sand Pump in Minnesota.* [Centrifugal sand and water pumps were used, with electric power. The area stripped was 1000 by 200 ft. and 65 ft. deep].—E. & M. J. Jan. 29 1916; p 211; pp 4¼*; 25c.

——— *Types and Costs of Slack Cable Excavator Plants.* [The excavators are first briefly described and their use discussed, and this is followed by an account of operating costs, including labor].—Canadian Eng. April 6 1916; p 410; pp 1½; 35c.

——— *Utah Copper Co., Utah.* [Abst. from annual report. Mill and mine operations are given with costs and production for the same. Figures of interest in operating and finances are also given].—E. & M. J. April 22 1916; p 733; pp 1¾; 25c.

MINING MISCELLANY

Alderson, M. W.—*Mining Possibilities in Colombia, South America.* [Considerable of the article is on gold dredging operations and the general conditions surrounding the same in that country].—Mg. World May 20 1916; p 947; pp 3½*; 10c.

Ash, S. H.—*Working a Steep Coal Seam by the Longwall Method, Washington.* [Substituted for room-and-pillar and chute-and-pillar system and made an unprofitable mine profitable].—Coal Age April 29 1916; p 742; pp 3½*; 20c.

Bancroft, G. J.—*Mining in Colorado.* [A general account of the operations for 1914 and previous years].—M. & S. P. Mar. 4 1916; p 349; pp 1; 20c.

Barbour, P. E.—*General Review of Mining in the United States in* 1915. [Each state is taken up separately].—E. & M. J. Jan. 8 1916; p 105; pp 11; 25c.

Beard, J. T.—*Conference on Standard-*

ization of Mining Reports.—Coal Age Mar. 11 1916; p 457; pp 1¾; 20c.

Bell, R. N.—*Mining in Idaho.* [Reviews operations of the principal mines and smelters in the state].—E. & M. J. Jan. 22 1916; p 177; pp 3; 25c.

Bradley, W. W.; Brown, G. C.; Lowell, F. L.; McLaughlin, R. P.—*Mines and Mineral Resources of Fresno, Kern, Kings, Madera, Mariposa, Merced, San Joaquin and Stanislaus Counties, California.* [Is divided into counties under which the various properties and prospects therein are separately described].—State Geol. Surv. Report 14456—EE; pp 220*.

Carnahan, T. S.—*Underground Mining Methods of Utah Copper Co., Utah.* [Describes the geology of the body, methods of stoping, construction of chutes, haulage, costs, supports, etc.].—A. I. M. E. Bull. Jan. 1916; p 51; pp 14*; 35c. E. & M. J. Jan. 29 1916; p 216; pp 4¼*; 25c.

Collins, W. F.—*Chinese Mining Legislation.* [Treats on the mining laws of the country and discusses the opportunities of foreign operations in the country].—Inst. of Mg. & Met. Bull. 136; p 1; pp 24; 50c.

Dickson, R. H.—*Mitchell Top-Slice and Caving System.* [The system is used extensively in the Cole mine of the Calumet & Arizona Co., Bisbee, Ariz.].—E. & M. J. Mar. 25 1916; p 545; pp 4½*; 25c.

Dickson, R. H.—*The Gilman Cut-and-Fill System of Mining.* [A system for the mining of 10-ft. slices which must be of sufficiently strong ground to hold while the slice is being mined and filled].—E. & M. J. April 8 1916; p 631; pp 2¾*; 25c.

Estep, H. Cole.—*Iron Range Developments in* 1915. [A review of operations in northern Michigan, Minnesota and Wisconsin, with a brief on the war's effects on labor].—I. Tr. Rev. Jan. 6 1916; p 81; pp 13½*; 60c.

Hall, Albert.—*A Sudbury Ore Chute, Ontario.*—Canadian Mg. Jnl. Mar. 1 1916; p 117; pp 1¼*; 35c.

Hayden, H. H.—*Present and Future of India's Mineral Industry.* [Presidential address to the Mining and Geological Inst. of India].—Mg. World Mar. 25 1916; p 611; pp 1½; 10c.

Horwood, R. J.—*Broken Hill Underground Mining Methods.* [Discusses methods of mining, shaft operations, methods of supporting and timbering, ventilation, drilling and other details of interest].—A. I. M. E. Bull. Jan. 1916; p 65; pp 25*; 35c.

Howard, L. O.—*Mining in Utah.* [A general current review of mining in the state].—M. & S. P. Feb. 19 1916; p 280; pp 1¾*; 20c.

Howard, L. O.—*Mining in Utah.* [A review of the present day situation in the zinc industry principally].—M. & S. P. Jan. 22 1916; p 132*; pp 1½*; 20c.

Ledoux, A.—*The German Invasion of Belgium, with Particular Reference to the Mining Industry.* [Discusses the effects of the invasion on production and imports and exports].—Canadian Mg. Jnl. Jan. 1 1916; p 3; pp 2¾; 35c.

Livermore, Robert.—*Mining Districts of Northern Ontario.* [A review of the geology, mining and milling in northeastern Ontario, confined mostly to gold and silver].—M. & S. P. Jan. 15 1916; p 89; pp 3¾*; 20c.

Marriot, H. F.—*Transvaal Mining in* 1915. [Doings of the mines, mills and gem industry during the year, with production figures].—E. & M. J. Jan. 8 1916; p 122; pp 2; 25c.

Maxwell-Lefroy, E.—*Wolframite Mining in the Tavoy District, Lower Burma.* [Brings out the important points in a detailed manner as regards history, geology, law, concentration of ores and mining in general].—Bull. of Inst. Mg. & Met. London; Dec. 9 1915; pp 18; 50c.

McDonald, P. B.—*Mining at the Nevada Consolidated, Nevada.* [Items of financial interest from many other copper companies are spoken of. The deposit is described from a mining standpoint. The methods of timbering, haulage, drilling, etc., are described].—M. & S. P. June 10 1916; p 858; pp 4*; 20c.

McDonald, P. B.—*Scheelite Mining and Grading.* [Gives details of the grades, as sold to the ore buyer for the smelter and reviews mining of the mineral in southern California].—M. & S. P. Jan. 8 1916; p 40; pp 1½*; 20c.

Morlock, A. G.—*Calculation of Mine Dams.* [To extinguish a mine-fire the method described may be used for computing a dam to safely hold the water in the desired portion of the mine].—Coal Age Mar. 25 1916; p 534; pp 1¾*; 20c.

Perkins, F. C.—*British Columbia Mining Hydro-Electric Plants.* [Detailed information of a general nature is given on several plants, principal among which is the Falls Creek plant of the Granby Con. Co.].—Mg. World May 6 1916; p 865; pp 4¼*; 10c.

Plumb, A. M.—*Ore Valuation—How Arrived At.* [It is here shown that assay values multiplied by market values does not give the value of ore. The value of various grades of concentrates must be estimated and the value per

ton computed therefrom].—Mg. World Jan. 8 1916; p 71; pp 1¼; 10c.

Ricketts, L. D.—*Improved Mining and Metallurgy an Aid to Conservation.* [A paper read before the second Pan-American Scientific Congress pointing out the waste allowed by our present day methods].—Mg. World April 22 1916; p 778; pp 1½; 10c. E. & M. J. Feb. 12 1916; p 291; pp 1½; 25c.

Roberts, E. I.—*Mine Warehouse System.* [On the careful arrangement of supplies and methods of accounting for them].—Coal Age Jan. 15 1916; p 115; pp 2½*; 20c.

Seidl, Kurt.—*Ueber den Verhieb der Kalisalzlagerstätten durch Reinen Verstazbau.* [On the geology and mining methods of salt bodies in Germany. A room and pillar system is used].—Zts. Oberschles. Berg & Hütten-Vereins Sept. 1914; p 331; pp 13½*; 50c.

Scott, D. B.—*Stoping Hard Ore at Miami, Arizona.* [Abst. of a paper read before the A. I. M. E.].—M. & S. P. June 24 1916; p 943; pp 4*; 20c.

Singewald, J. T., Jr.; Miller, Benjamin. —*High Grade Manganese Ores of Brazil.* [The deposits of Minas Geraes, their occurrence and methods of operation, with figures on exports to the U. S. are given]. Iron Age Feb. 17 1916; p 417; pp 4*; 30c.

Sperr, F. W.—*Stoping Methods.* [Answers to various questions in regard to mining methods, such as top-slicing, square-set systems, etc.].—M. & S. P. Feb. 19 1916; p 265; pp 4¾*; 20c.

Sperr, F. W.—*Stoping by Branched Raises.* [A method of particular use in the mining of large bodies of soft ore, as the iron deposits of Lake Superior].—M. & S. P. May 20 1916; p 750; pp 2½*; 20c.

Sperr, J. D.—*The Tom Reed-Gold Road Mining District, Arizona.* [Take up the general situation in the camp and describes the geology in a brief way].—E. & M. J. Jan. 1 1916; p 1; pp 4¾*; 25c.

Straus, L. W.—*The Mineral Industry of Chile.* [In reviewing the conditions in general many figures on production, import and export are given].—M. & S. P. April 1 1916; p 475; pp 3¾*; 20c.

Tremoureux, R. E.—*A New Dry-House.* [Costs and details of construction for this house constructed at the Champion mine, Nevada City, Cal., are given].—M. & S. P. June 17 1916; p 903; pp 2½*; 20c.

Weston, E. M.—*Does It Pay to Reopen Old Mines?* [A discussion of the factors governing the same].—Mg. & Engg. Rev. Feb. 5 1916; p 114; pp 3½; 35c.

Wheler, A. S.—*Antimony Production in the Hunan Province, South China.* [A paper read before the Inst. of Mining & Met., London. The deposits, some cost items, methods of contracting and some information on smelting are given].—Mg. World April 8 1916; p 697; pp 2¾; 10c. E. & M. J. April 8; p 637; pp 4¼*; 25c.

Willis, C. F.—*Mining in Arizona.* [A paper on many current items of interest in the state's mining operations].—M. & S. P. Feb. 26 1916; p 299; pp 2*; 20c.

——— *Alaska Juneau Gold Mining Co., Alaska.* [Details of mining and milling operations].—E. & M. J. May 20 1916; p 911; pp 1¼; 25c.

——— *Bureau of Mines Director's Fifth Annual Report to the Secretary of Interior.*—Bureau of Mines Report; pp 106.

——— *El Oro District, Estado de Mexico, During* 1915. [A general outline of operations and conditions during the year].—E. & M. J. Jan. 29 1916; p 209; pp 1½*; 25c.

——— *Mine Plant Water System.*—E. & M. J. June 17 1916; p 1073; pp 1; 25c.

——— *Mining in Mexico in* 1915.—E. & M. J. Jan. 8 1916; p 116; pp 2; 25c.

——— *South America in* 1915. [A review of the progress of various companies and their doings during 1915].—E. & M. J. Jan. 8 1916; p 118; pp 2¼; 25c.

——— *The Use of Welding Outfits at Mines and Smelters.* [An editorial review of the applicability of oxy-acetylene welding outfits in mines and mills for repairing heavy machinery].—Mg. World Jan. 22 1916; p 151; pp 4¼*; 10c.

MINES AND MINING (b*).

TRANSPORT AND HAULAGE

Transport (Rail and Water)

Brinegar, T. P.—*Mining in Southwestern Arizona.* [A general review of current doings in the field, with special reference to transportation facilities].—Mex. Mg. Jnl. Feb. 1916; p 43; pp 1¼; 35c.

Brown, R. D.—*Turnouts for Mine Tracks.* [Abst. from Engg. News. Gives details, formulae and the mathematics connected with the same].—E. & M. J. May 6 1916; p 816; pp 1¼*; 25c. Coal Age April 8 1916; p 626; pp 1¼*; 20c.

Burrows, J. S.—*Progress in the Export Trade.* [Although a decline was shown the business was increased with competitive markets and exports would have been higher except for transportation facilities].—Coal Age Jan. 8 1916; p 72; pp 1¾; 20c.

Cairnes, D. D.—*Upper White River District, Yukon.* [Speaks of the geography of the country, its routes of travel and a complete review of the geology and ore deposits. Gold, coal, and copper make up the economic deposits of the country].—Canada Geol. Surv. Memoir 50; pp 191*.

Crane, W. R.—*Transportation in Alaska.* [A paper read before the Railway Club of Pittsburgh].—E. & M. J. Feb. 19 1916; p 347; pp 1¼; 25c.

Higgins, C. H.—*Handling Retail Coal in a Concrete Cylinder Plant.* [Description, illustrations and drawings of a terminal plant for handling coal].—Coal Age June 3 1916; p 967; pp 2*; 20c.

Linn, S. W.—*Car Dumping in Water Shipping.* [A method for hoisting an entire railroad car at the docks to load coal into a ship].—Coal Age May 6 1916; p 791; pp 4*; 20c.

MacDonald, D. F.—*Some Engineering Problems of the Panama Canal in Their Relation to Geology and Topography.* [Takes up structural geology features].—U. S. Bur. of Mines Bull. 86; pp 88*.

Miller, B. L.; Singewald, J. T.—*Mining Industry in Brazil.* [Principally gold, manganese, monazite sands and gems, though deposits of iron not being worked are there. Speaks of the government railroad].—E. & M. J. April 29 1916; p 759; pp 3¾*; 25c.

Parsons, W. B.—*Railways in China.* [Describes several ways of transportation used in the country and takes up the way in which they are operated].—Eng. Club. Phil. Jan. 1916; p 35; pp 33*; 60c.

Raymond, W. G.—*Railroad Field Manual for Civil Engineers.* [The book contains 31 figures and 83 tables].—Wiley & Son; book; pp 398*; $3.

Ropes, L. S.—*Activities in the Marysville Mining District, Montana.* [Goes into the geology, mining conditions and railroad facilities].—Mg. World April 29 1916; p 819; pp 2¾*; 10c.

Shurick, A. T.—*Business Aspects of the Coal Industry in* 1915. [Discusses the great revision of the trade channels and results which the war has produced in the market. Transportation is also considered].—Coal Age Jan. 8 1916; p 61; pp 3½; 20c.

Singewald, J. T., Jr.; Miller, B. L.—*The Mining Industry of Peru.* [Besides talking of the metals mined the question of labor, law and transportation are spoken of].—E. & M. J. May 13 1916; p 845; pp 5½*; 25c.

Vogelstein, L.—*Buying and Selling Nonferrous Metals of South America.* [A paper read before the Pan-American Scientific Cong. Besides buying, selling and transportation it speaks of the incapacity of U. S. smelters driving the trade to England].—E. & M. J. Feb. 12 1916; p 292; pp 4½; 25c.

Wagner, P. A.—*Economic Geology and Mineral Industry of Southwest Africa.* [Prospecting, sampling, dredging, washing and dressing, water supply and transportation in the diamond fields of this area are reviewed].—S. Afr. Mg. Jnl. May 6 1916; p 133; pp 1; 35c.

Warden-Stevens, F. J.—*Coal Shipping from China and Japan.* [On the transportation of the coal over water-routes and structures for handling the same at the dock].—Coal Age Mar. 25 1916; p 531; pp 2½*; 20c.

Watson, M. S.—*Railway Traveling in Mexico.* [Abstracted from the Chicago Tribune and describing general conditions of travel in that country].—E. & M. J. Feb. 19 1916; p 340; pp 1¾; 25c.

Wolkins, G. G.—*Market and Shipping Conditions on Atlantic Coast in* 1915. [Ten months of indifference and two months of flurry made up the year].—Coal Age. Jan. 8 1916; p 67; pp 4; 20c.

*(b) Includes Transport and Haulage, Storage, Accidents, Sanitation, Safety, Rescue and First Aid, Labor, Management, Sociological, Accounts, Bookkeeping.

Ysassi, Victor.—*The Iron Mines of the Sierra Menera District, Spain.* [A description of their ore deposits and transporting facilities].—A. I. M. E. Bull. Feb. 1916; p 237; pp 6*; 35c.

——— *Brazil Has Immense Bodies of Iron Ore.* [Reviews the subject from the point of ore reserves and tells the location of ore bodies and available transportation].—Mg. World Jan. 15 1916; p 123; pp 1½*; 10c.

——— *Moving Big Ore Unloaders by Water.* [Treats on unloading plants used on the Great Lakes, which are constructed on barges and towed from one place to another].—I. Tr. Rev. Mar. 23 1916; p 647; pp 2*; 25c.

——— *Review of Coal Mining in* 1915. [Reviews by different authors for the producing states, giving production and general conditions of the industry therein. The transportation question is dealt with some, as is the question of accidents and safety].—Coal Age Jan. 8 1916; p 38; pp 21; 20c.

——— *Treating Ties for the G. R. & I., I. P. L. and P. M. Railroads.* [A brief description of the plant's equipment and a general description of their operations].—Wood-Preserving June 1916; p 27; pp 2¼*; 35c.

Haulage and Conveying in Mines

Baechtold, C. A.—*New Handling Plant of the Temescal Rock Co., Corona, Cal.* [Storage hoisting, crushing and haulage of the rock are described in fair detail].—Mg. World Mar. 18 1916; p 557; pp 2½*; 10c.

Bailey, P. S.—*Arc and Incandescent Headlights.*—Coal Age April 29 1916; p 753; pp 4¼*; 20c.

Bailey, P. S.—*Types of Arc and Incandescent Lights for Mine Locomotives.* [Many types of lights are shown and the advantages and correct uses of each dwelt on].—Mg. World May 13 1915; p 911; pp 3¼; 10c.

Barr, J. C.—*Chain Grizzly at the Rowe Mine, Minnesota.* [A grizzly made of chains and used where the train of cars dump into the pocket].—E. & M. J. April 1 1916; p 599; pp 1½*; 25c.

Brown, J. F. K.—*A Puzzle in Mining Costs.* [In thin seams neither longwall nor room and entry systems were satisfactory. Haulage was a big item and costs are given on this and other mining operations].—Coal Age Feb. 5 1916; p 246; pp 3¼*; 20c.

Butcher, E. W. R.—*Standard Sub Turns.* [Treats on the standardizing of curves in sub-level haulage so that a supply of tracks may be had and thus eliminate the work of specially bending them].—E. & M. J. June 10 1916; p 1029; pp ¾*; 25c.

Carnahan, T. S.—*Underground Mining Methods of Utah Copper Co., Utah.* [Describes the geology of the body, methods of stoping, construction of chutes, haulage, costs, supports, etc.].—A. I. M. E. Bull. Jan. 1916; p 51; pp 14*; 35c. E. & M. J. Jan. 29 1916; p 216; pp 4¼*; 25c.

DeWolf, E. C.—*Goodman Storage Battery Locomotives.* [A discussion on the use, operation and construction of this type of locomotive for underground haulage].—C. Tr. Bull. Jan. 15 1916; p 43; pp 4*: 25c.

DeWolf, E. C.—*The Goodman Storage Battery Locomotives — Particularly the Articulated Type.* [A description of the construction and uses of this type].—Mg. World Jan. 29 1916; p 203; pp 3¾*; 10c.

Dunlap, R. R.—*The Use of Storage Battery Locomotives in Mines.* [Has tables, diagrams to show construction and other information besides discussion regarding the use of this type].—C. Tr. Bull. Feb. 15 1916; p 43; pp 6¾*; 25c.

Edsall, H. J.—*East Broad Top Coal Transfer and Preparation Plant.* [The coal is transferred by this plant from narrow-gage cars to the standard-gage, and in being handled is treated and made ready for the market].—Coal Age Mar. 25 1916; p 524; pp 2½*; 20c.

Foley, F. J.—*Storage-Battery Locomotive in a Coal Mine.* [Describes the motor and compares it with mule-haulage].—Coal Age April 1 1916; p 587; pp 2¾*; 20c.

Gerke, Arthur.—*Förderwagenkipper im Betriebe unter Tage.* [Tripping and dumping devices for tram-cars underground].—Zts. Oberschles. Berg & Hütten-Vereins Oct. 1914; p 393; pp 13*; 50c.

Gerke, Arthur.—*Scheibenstotzbau mit maschineller Abbauförderung auf Gieschegrube.* [Methods of loading from stopes with motor haulage underground].—Zts. Oberschles. Berg & Hütten-Vereins Jan. 1915; p 1; pp 4¾*; 50c.

Gibson, John.—*The Logic of Colliery Trams.* [Abst. of a paper read before the North of England Inst. of Mg. & Mech. Eng.].—I. & C. Tr. Rev. Feb. 18 1916; p 177; pp 2*; 35c. Coll'y Guard. Feb. 18 1916; p 314; pp 1⅜*; 35c.

Green, Raoul.—*Horse Haulage Versus Compressed Air Haulage—A Comparison of Costs.* [The comparison is made with actual figures and discussion].—Canadian

Mg. Inst. Bull. June 1916; p 570; pp 5; 35c.

Hicks, H. L.—*Quarrying at Rockland Lake, New York.* [The haulage, drilling and power equipment and operations are described in a general way].—Engg. & Cont. June 7 1916; p 512; pp 1¾*; 20c.

Hood, O. P.; Kudlich, R. H.; Burrell, G. A.—*Gasoline Mine Locomotives in Relation to Safety and Health.* [On the care of the engines and their adjustment to make the least obnoxious gases. Methods for analyzing the exhaust gases are also given].—U. S. Bur. of Mines Bull. 74; pp 83*.

Hyde, M. L.—*Opening Shaft Mines.* [Many suggestions on this method of working coal mines are given and two complete arrangements for the bottom are given].—Coal Age May 27 1916; p 910; pp 3¾*; 20c.

Liebermann, P. B.—*Comparative Friction Test of Two Types of Mine Cars.* [Abst. of a paper read before the A. I. M. E. Plane bore and roller bearings are the two types compared].—Mg. World June 24 1916; p 1175; pp 2½*; 10c.

McCrystle, J. — *Underground Mine Roads.* [Details of methods for surveying for haulage ways in coal mines are given and a discussion on better plans for haulage ways in coal mines].—Coal Age June 3 1916; p 959; pp 5½*; 20c.

McCrystle, J.—*Underground Mine Roads.* [A list of set rules to be adhered to by the track layers and foremen. They have to do with details, distances, etc., to be noted by the trackmen and surveyors].—Coal Age June 10 1916; p 1000; pp 3¼*; 20c.

McDonald, P. B.—*Mining at the Nevada Consolidated, Nevada.* [Items of financial interest from many other copper companies are spoken of. The deposit is described from a mining standpoint. The methods of timbering, haulage, drilling, etc., are described].—M. & S. P. June 10 1916; p 858; pp 4*; 20c.

Nicholls, H. E.—*A Pioneer Bucket Dredge in Northern Nigeria.* [Placer tin is mined, and semi-Diesel engines used for power. Details of mining costs are given].—Bull. Inst. of Mg. & Met., London, No. 137; pp 13*; 50c.

Read, R. G.—*A Plant for Thin-Seam Coal.* [Electric power is used and their methods of drilling, hauling and handling are taken up briefly].—Coal Age May 13 1916; p 830; pp 2*; 20c.

Reed, J. W.—*Methods of Mining and Preparation of Coals for Market in Inspection District No.* 3. [Mining methods, ventilation, mining machines, blasting, haulage and electricity are the principal subjects considered].—Ky. Dept. of Mines 1915; Annual Report III; pp 108*.

Reisser, H.—*Handling High Coal Outputs.* [Describes haulage and handling methods for collieries].—Coal Age Mar. 18 1916; p 486; pp 2*; 20c.

Richards, M. E.—*Progress in Underground Loading.* [Speaks of machines for shoveling ore into the tram-car].—L. S. M. I. Sept. 1915; pp 9*; 35c.

Robertson, A.; Johnston, A. M.—*Belt Conveyors.* [A paper read before the S. Afr. Inst. of Eng.].—Coll'y Guard. April 20 1916; p 749; pp 2⅛*; 35c.

Smallwood, P. E. — *Working Thin Seams of Coal by Conveyors.* [A paper read before the National Assn. of Colliery Mng., England].—I. & C. Tr. Rev. April 28 1916; p 487; pp 1; 35c.

Stauch, Karl.—*Selbsttätiger Schachtverschlutz mit einer Modifikation für Tonnlägige Förderung von Mehreren Horizonten und der Verschlutz des Kaindlstollens um Schneeberg in Triol.* [A safety gate automatically operated for tunnels, shafts and other haulage ways].—Montan. Rund. Jan. 1 1916; p 7; pp 3*; 35c.

Steelman, J.—*The Wire Rope and the Coal Mine.* [A general detailed discussion on the proper kinds of rope for different uses, such as hoisting, hauling, guying, aerial tramways, etc.].—Coal Age June 24 1916; p 1082; pp 5½*; 20c.

Stone, S. R.—*Cableway of Asbestos Corporation of Canada.* [Open pits are used and the material taken out by aerial trams].—Mg. World Feb. 19 1916; p 397; pp 2½*; 10c.

Taylor, M. T. — *Lowering Horses Through a Small Shaft.* [Describes a system for bundling the horse with rope and then lowering].—Mg. Mag. Jan. 1916; p 28; pp 2*; 50c.

Young, C. M.—*Locust Mountain Colliery, Pennsylvania.* [A brief description is first given of the seam and then the methods of haulage and preparing the coal for market are given in a concise way].—Coal Age April 22 1916; p 702; pp 2¾*; 20c.

——— *Concentrate and Calcine Cars at Miami Smelter, Arizona.* [Line drawings and description of the cars].—E. & M. J. Mar. 25 1916; p 563; pp 1*; 25c.

——— *Cost of Spur Tracks.* [The cost of tracks of several different lengths are divided and given in tabulated form].—Coal Age June 10 1916; p 998; pp ½; 20c.

——— *Details of Practical Mining.* [A compilation of small details as found

in past issues of the E. & M. J.].—McGraw-Hill Co.; book; pp 544*; $5.

——— *Electric Power for Public Works as Brought Out at the Wilson Ave. Tunnel, Chicago.* [A complete description of electric power used in the tunnel is given. Electricity is here used for hoisting, air compression, rock crushing, haulage, ventilation and lining the tunnel with concrete].—Elect. Rev. & West. Elect. June 3 1916; p 1017; pp 6¾*; 20c.

——— *Ford Collieries Co., New No. 3 Mine, Pennsylvania.* [After a general description of the surface equipment and power plant methods of cutting and haulage are taken up].—Elect. Mg. April 1916; p 33; pp 18*; 20c.

——— *Operation and Maintenance Cost of Aerial Tramways.* [Abst. from Aerial Tramways].—E. & M. J. June 3 1916; p 986; pp ¾; 25c.

——— *The Rands Shaking Loader.* [A loader which tends to place the coal from above into the railroad car more gently, so as not to break the more friable coals].—Coal Age April 1 1916; p 578; pp 1¾*; 20c.

STORAGE

Armstrong, F. H.—*A New Electro-Hydraulic Shovel.* [A paper read before the A. I. M. E. The main power is derived from water under pressure. A separate motor operates other less important parts. The shovels are used in moving stock piles at Michigan iron mines].—I. Tr. Rev. Feb. 17 1916; p 393; pp 2½*; 25c.

Baechtold, C. A.—*New Handling Plant of the Temescal Rock Co., Corona, Cal.* [Storage hoisting, crushing and haulage of the rock are described in fair detail].—Mg. World Mar. 18 1916; p 557; pp 2½*; 10c.

Kershaw, J. B. C.—*The Storage of Coal.* [Treats on several methods for storing coal, among which under sea storage is given preference, as are concrete over wooden structures].—Coal Age Feb. 5 1916; p 240; pp 4*; 20c.

Kershaw, J. B. C.—*The Storage of Coal—II.* [Advice in regard to this part of coal storage which affects the original properties].—Coal Age Jan. 22 1916; p 168; pp 1¾; 20c.

Monroe, C. E.—*Storage and Handling of Explosives in Mines.* [A paper read before the Pan-American Scientific Soc.].—E. & M. J. Feb. 19 1916; p 349; pp 3¾; 25c.

Montgomery, W. J.—*Ventilation Without Crosscuts.* [Discusses losses from air leaking through the stops at crosscuts so the method has been devised to cut down the number of crosscuts].—Coal Age April 1 1916; p 583; pp 1¼*; 20c.

Reed, J. W.—*Methods of Mining and Preparation of Coals for Market in Inspection District No. 3.* [Mining methods, ventilation, mining machines, blasting, haulage and electricity are the principal subjects considered].—Ky. Dept. of Mines 1915; Annual Report III; pp 108*.

——— *Direct Current of 250 Volts Used Underground at the Copper Queen, Arizona.* [Gives details on the construction of the lines which are used for haulage and relates to five accidents which have resulted from this source].—Mg.. World Jan. 15 1916; p 116; pp 1; 10c.

——— *Erecting and Starting Up a Large Mine Fan.*—I. & C. Tr. Rev. Feb. 25 1916; p 212; pp 1*; 35c.

ACCIDENTS

Fay, A. H.—*Coal Mine Fatalities in the United States in* 1915. [Also contains a list of permissible explosives].—U. S. Bur. of Mines; Report; pp 80; 20c.

Fay, A. H.—*Metal Mine Accidents in the United States During the Calendar Year* 1914. [Both tabulated and descriptive information is given].—U. S. Bur. of Mines Tech. Paper 129; pp 96*.

Fay, A. H.—*Coal Mine Fatalities in the United States in March,* 1916. [A list of permissible explosives, lamps and motors tested prior to May 1, 1916, is also given].—U. S. Bur. of Mines Monthly Statement; pp 22.

Hutton, C. E.—*Chief Sources of Accidents in the Witwatersrand Mine.* [Accidents are taken up which occurred from falling rock, explosives and the gases not removed by ventilation, shaft openings, etc.].—Jnl. of Chem., Met. & Mg. Soc. of S. Afr. Nov. 1915; p 95; pp 8½; 85c.

Irvine, L. G.—*Accidents from Poisonous Asphyxiating Gases in Mines.* [Abst. from an article in the Medical Journal of South Africa].—Coll'y Guard. April 7 1916; p 653; pp 2; 35c.

Richards, W. B.—*Fighting an Anthracite Mine Fire.* [Describes a fire and the extinguishing of the same at a colliery of the Lehigh Coal & Navigation Co.'s property, Pennsylvania].—Coal Age June 10 1916; p 1013; pp 4¼*; 20c.

Young, C. M.—*Cave at the Prospect Colliery, Pennsylvania.* [The roof caved and a directly overhead stream flowed

into the mine. The accident is described and also the method for handling the trouble].—Coal Age Feb. 26 1916; p 373; pp 2¼*; 20c.

——— *Breathing Apparatus, Improvements Made in by the Bureau of Mines.* [A new apparatus for use in mine rescue work].—Coal Age April 22 1916; p 709; pp 2¾*; 20c.

——— *Direct Current of 250 Volts Used Underground at the Copper Queen, Arizona.* [Gives details on the construction of the lines, which are used for haulage, and relates to five accidents which have resulted from this source].—Mg. World Jan. 15 1916; p 116; pp 1; 10c.

——— *Explosion Near Kempton, W. Va.* [An explosion of coal dust at No. 42 mine of the Davis Coal & Coke Co.].—Coal Age Mar. 18 1916; p 498; pp 2*; 20c.

——— *Ravensdale, Washington, Mine Disaster.* [The cause of the explosion has not been decided and the information here given is rather in the form of discussions].—Coal Age Mar. 11 1916; p 459; pp 3½*; 20c.

——— *Report of the Department of Mines, Pennsylvania.* [Gives the steps taken towards safety and sanitation and preventing accidents, with an account of those which occurred. Tables on the production of the various coal mines are given and show the collective production of the districts and state].—Dept. of Mines, Pa., 1914; pp 614.

——— *Report of the Department of Mines, Pennsylvania, 1914, Part II.* [On the bituminous fields. Most of the information is in tabulated rather than descriptive form].—Pa. Dept. of Mines, Report 1914; pp 1057.

SAFETY

Burrell, G. A.—*A New Firedamp Detector.* [A paper read before the West Virginia Coal Mining Inst. The device will detect the gas to within 0.1%].—Coal Age Jan. 22 1916; p 157; pp 2*; 20c.

Chance, H. M.—*Chance Acetylene Safety Lamp.* [Is similar to the ordinary acetylene lamp, but with safety devices, including a lighter for the flame].—Coal Age April 1 1916; p 580; pp 2¾*; 20c.

Evans, Nicholas.—*Inspector's View of Mine Safety.* [Evans is state mine inspector at Johnstown, Pa., and here discusses his ideas and the general question of coal mine safety].—Coal Age April 22 1916; p 707; pp 2; 20c.

Fay, A. H.—*Coal Mine Fatalities in the United States,* 1915. [Besides tables and description regarding accidents lists are given of permissible explosives, electric lamps and motors, tested prior to Jan. 1, 1916].—U. S. Bur. of Mines; pp 80*; 20c.

Fay, A. H.—*Coal Mine Fatalities in the United States in March,* 1916. [A list of permissible explosives, lamps and motors tested prior to May 1, 1916, is also given].—U. S. Bur. of Mines Monthly Statement; pp 22.

Hardwick, F. W.—*The History of the Safety Lamp.* [A paper read before the Inst. of Mining, London].—Coll'y Guard. June 9 1916; p 1087; pp 1½; 35c.

Hood, O. P.; Kudlich, R. H.; Burrell, G. A.—*Gasoline Mine Locomotives in Relation to Safety and Health.* [On the care of the engines and their adjustment to make the least obnoxious gases. Methods for analyzing the exhaust gases are also given].—U. S. Bur. of Mines Bull. 74; pp 83*.

Nordberg, G. E.—*Hoist for Elm Orlu Mining Co., Montana.* [The clutches are engine operated and the hoist is equipped with many new safety devices].—E. & M. J. Feb. 5 1916; p 256; pp 1½; 25c.

Stauch, Karl.—*Selbsttätiger Schachtverschlutz mit einer Modifikation für Tonnlägige Förderung von Mehreren Horizonten und der Verschlutz des Kaindlstollens am Schneeberg in Triol.* [A safety gate automatically operated for tunnels, shafts and other haulage ways].—Montan. Rund. Jan. 1 1916; p 7; pp 3*; 35c.

Taylor, J. L.—*The Safe Transportation of Explosives and Other Dangerous Articles.* [A paper read before the National Exposition of Chemical Industries].—Met. & Chem. Engg. Jan. 1 1916; p 46; pp 1; 30c.

Thomas, T. J.—*Firedamp Detectors for Miners' Safety Lamps.* [A number of tests made by use of platinum wire and electricity. The results are given].—Coll'y Guard. April 28 1916; p 799; pp 1½*; 35c.

Thomas, T. J. — *Gas Detector for Miners' Safety Lamps.* [All apparatus for use in conjunction with the lamps is described with the lamp].—Coll'y Guard. Jan. 28 1916; p 172; pp 1½*; 35c.

White, J. H.—*Welfare Work and Its Relations to Workmen's Compensation.* [A paper read before the Coal Mg. Inst. of America, in which it is argued that welfare work makes better employes and lessens accidents].—C. Tr. Bull. Jan. 15 1916; p 47; pp 4; 25c.

Wilson, H. M.—*Workmen's Compensation Law and Mine Safety.* [A paper read before the Coal Mining Institute of

America].—Coal Age Jan. 1 1916; p 12; pp 4½; 20c.

Wolf, W.—*Neuere Leonardschaltungen in Bergwerken.* [Describes a new installation of electric hoists with safety and signaling equipment].—Kali Jan. 1 1916; p 4; pp 7½*; 35c.

——— *Cost of Upkeep of Electric Safety Cap Lamps.* [Gives details of cost for a plant handling 250 lamps per day].—Coal Age Mar. 11 1916; p 453; pp 1½*; 20c.

——— *Emergency Escape-Way for Mines.* [A recently patented plan. Its construction is given and detail, as is the way in which it is expected to serve as an escape-shaft].—Mg. World June 3 1916; p 1045; pp 1¼*; 10c.

——— *Report of the Department of Mines, Pennsylvania.* [Gives the steps taken towards safety and sanitation and preventing accidents, with an account of those which occurred. Tables on the production of the various coal mines are given and show the collective production of the districts and state].—Dept. of Mines, Pa., 1914; pp 614.

——— *Reviews of Coal Mining in* 1915. [Reviews by different authors for the producing states, giving production and general conditions of the industry therein. The transportation question is dealt with some, as is the question of accidents and safety].—Coal Age Jan. 8 1916; p 38; pp 21; 20c.

——— *Safety Device for Chairing Cages.* [A device for locking cars on the cage, consisting essentially of a bar across the open side].—Anode April 1916; p 2; pp 1¼*; 20c.

——— *Welfare and Safety-First Work in the U. S. Mines.* [A review of the subject for 1915].—Mg. World Jan. 1 1916; p 52; pp 1½*; 10c.

RESCUE AND FIRST-AID

Coldham, J. C.—*Organization and Equipment of a Mine Rescue Station.* [Information is given regarding tests on the endurance of the rescue men and methods of operating for the rescue crew. Equipment and installations are also described].—Proc. Aus. Inst. M. E.; N. S. No. 21 1916; p 9; pp 38*; 65c.

Irvine, L. G.—*Accidents from Poisonous Asphyxiating Gases in Mines.* [Abst. from an article in the Medical Journal of South Africa].—Coll'y Guard. April 7 1916; p 653; pp 2; 35c.

Irvine, L. G.—*First-Aid Treatment of Cases of Gas Poisoning.* [Abst. from the Medical Jnl. of S. Afr.].—E. & M. J. May 20 1916; p 901; pp 1; 25c.

SANITATION

Burrell, G. A.; Oberfell, G. G.—*Effects of Atmospheres Deficient in Oxygen on Small Animals and on Men.* [Results of a number of different tests made on both animals and men].—U. S. Bur. of Mines Tech. Paper 122; pp 12; 15c.

Garcia, J. A.—*Modern Wash House for Miners.* [This house is estimated to have cost $15.86 per man].—Coal Age Jan. 15 1916; p 112; pp 2⅓*; 20c.

Hess, R. M.—*Hookworm Disease Among Miners.* [The worm sucks blood from the body and with this goes vitality. A synopsis of the extent of the disease is given, with symptoms and a quick, easy cure for the extinction of the same].—M. & S. P. April 8 1916; p 511; pp 1¾*; 20c.

Hoffman, F. L.—*Miners' Nystagmus.* (This is an eye disease. The symptoms, effects and causes are clearly defined, as also are methods of prevention, cure and treatment].—U. S. Bur. of Mines Bull. 93; pp 67; 20c.

Hood, O. P.; Kudlich, R. H.; Burrell, G. A.—*Gasoline Mine Locomotives in Relation to Safety and Health.* [On the care of the engines and their adjustment to make the least obnoxious gases. Methods for analyzing the exhaust gases are also given].—U. S. Bur. of Mines Bull. 74; pp 83*.

Key, A. Cooper.—*Dust Allaying in Rand Mines, South Africa.* [Gives detailed results and methods used for allaying the dust caused from drilling and blasting].—E. & M. J. June 17 1916; p 1065; pp 2¾*; 25c.

Lang, Herbert.—*Quicksilver Reduction.* [The nature of the ores, methods of assay, concentration of ores, metallurgy and condensation of the metal and diseases caused from mercury are taken up].—M. & S. P. May 13 1916; p 707; pp 8*; 20c.

Lanza, A. J.; White, J. H.—*How a Miner Can Avoid Some Dangerous Diseases.* [The methods described are those of strict attention to sanitation].—U. S. Bur. of Mines, Miners' Circ. 20; pp 26*.

Mercer, J. W.—*Mining in Ecuador.* [A paper read before the Pan-American Scientific Soc. The geology and gold mines are spoken of, besides a review of the available water power and sanitation in the camps].—E. & M. J. Feb. 19 1916; p 343; pp 3¾; 25c.

Pitchford, W. W.—*The Miner's Phthi-*

sis of the Rand, South Africa. [A paper read before the S. Afr. Assn. for the Advancement of Science].—S. Afr. Mg. Jnl. Jan. 22 1916; p 486; pp 1½; 35c.

Young, C. M.—*Lackawanna Washhouse, Pennsylvania.*—Coal Age April 29 1916; p 747; pp 1¼*; 20c.

———. *History of the Miners' Phthisis Problem on the Rand, South Africa.*—E. & M. J. May 27 1916; p 936; pp 1¼; 25c.

——— *Report of the Department of Mines, Pennsylvania.* [Gives the steps taken towards safety and sanitation and preventing accidents, with an account of those which occurred. Tables on the production of the various coal mines are given and show the collective production of the districts and state].—Dept. of Mines, Pa., 1914; pp 614.

LABOR AND MANAGEMENT

Ball, Robert H.—*Seventeenth Annual Report of the Mining Industry in Idaho for the Year* 1915. [Is a review of the usual kind made annually by the state mine inspector].—Boise, Idaho, Bur. of Mines; pp 134*.

Balliet, Letson.—*A Few of the Unnecessary Leaks in Mining.* [Points out inefficiencies found in mine management].—Mg. World Feb. 26 1916; p 437; pp 1; 10c.

Bancroft, G. J.—*Mining in Colorado.* [A general account of the operations for 1914 and previous years].—M. & S. P. Mar. 4 1916; p 349; pp 1; 20c.

Beckman, J. W.—*Electrochemical Possibilities of the Pacific Coast.* [A paper read before the American Electrochemical Soc. The questions of labor, raw material, both metals and non-metals, markets, etc., are taken up].—Mg. & Oil Bull. April 1916; p 101; pp 6¾*; 25c.

Burrell, G. A.; Oberfell, G. G.—*Effects of Atmospheres Deficient in Oxygen on Small Animals and on Men.* [Results of a number of different tests made on both animals and men].—U. S. Bur. of Mines Tech. Paper 122; pp 12; 15c.

Deloney, I. C.—*The Efficient Mine Foreman.* [A paper read before the Alabama Safety Assn.].—Coal Age Feb. 19 1916; p 338; pp 2; 20c.

Engelder, O. G.—*Mining in Sardinia.* [A general account of the lead-zinc mines, their operation, production, etc. Labor, wages, etc., are spoken of and in this connection the law in regard to hiring and expelling employes is brought *out].—M. & S. P. June* 10 1916; p 862; *pp 1; 20c.*

Field, E. B.—*The Little Brass Check in the Crow's Nest, Pennsylvania.* [Describes a system using brass checks for accounting for the number of cars a miner has taken out. They use purchased electric power].—Coal Age Mar. 18 1916; p 488; pp 2¼*; 20c.

Hodgson, J. P.—*Co-Operative Effort on the Part of Each Employe.* [A paper read before the Arizona section of the A. I. M. E.].—Mg. World June 3 1916; p 1043; pp 1¼; 10c.

Hoffman, F. L.—*Miners' Nystagmus.* [This is an eye disease. The symptoms, effects and causes are clearly defined, as also are methods of prevention, cure and treatment].—U. S. Bur. of Mines Bull. 93; pp 67; 20c.

Hutchins, J. P.—*Mining in the Russian Empire,* 1915. [Deals with dredging operations; the production of gold, platinum, petroleum, etc.; and labor conditions].—E. & M. J. Jan. 8 1916; p 124; pp 2½; 25c.

Hore, R. E.—*Mineral Resources of Michigan.* [Tables on the production and values of mineral products. Also a complete geological review of the copper deposits].—Mich. Geol. Surv. Lansing; Pub. 19, Ser. 16; pp 351*.

Irwin, E. F.—*Hiring, Handling and Firing.* [A general discussion and talk on the subject regarding labor, as seen by the manager of the employment department of the Homestake Mg. Co.].—Pahasapa June 1916; p 35; pp 4½*; 30c.

McLeish, John.—*Preliminary Report of the Mineral Production of Canada in* 1915. [The principal minerals are lead, zinc, copper, silver, gold, nickel, asbestos, coal and iron].—Canada Dept. of Mines, Mines Branch Report 408; pp 28.

McLeish, John.—*Production of Cement, Lime, Clay Products, Stone and Other Structural Materials.* [Some details given for separate provinces, but for the most part in general on Canada].—Canada Dept. of Mines, Mines Branch Report 383; pp 60.

Pitchford, W. W.—*The Miner's Phthisis of the Rand, South Africa.* [A paper read before the S. Afr. Assn. for the Advancement of Science].—S. Afr. Mg. Jnl. Jan. 22 1916; p 486; pp 1½; 35c.

Pratt, W. E.—*Coal in the Philippines.* [Treats on the geology, quality, taxes imposed, mining law and labor].—Coal Age Mar. 18 1916; p 491; pp 6½*; 20c.

Schneider, Herman.—*Selecting Men for Jobs.* [Makes a thorough and detailed study of a man and his characters during the different periods of his life and points out features and characters

which betray the nature and ability of the man].—Engg. Mag. June 1916; p 420; pp 12; 35c.

Singewald, J. T., Jr.: Miller, B. L.—*The Mining Industry of Peru.* [Besides talking of the metals mined the question of labor, law and transportation are spoken of].—E. & M. J. May 13 1916; p 845; pp 5½*; 25c.

Wilson, H. M.—*Workmen's Compensation Law and Mine Safety.* [A paper read before the Coal Mining Institute of America].—Coal Age Jan. 1 1916; p 12; pp 4½; 20c.

——— *Labor Difficulties in* 1915. [A review of labor strikes, their cause and outcome].—Coal Age Jan. 8 1916; p 84; pp 1¾; 20c.

——— *Metal Statistics,* 1916. [A compilation of tables on production and prices of all the various metals and fuels].—Amer. Metal Market; book; pp 368; 50c.

——— *Mining Dividends.* [A general talk and discussion on the relation of the financial end of mining to the laborer in West Australia].—Jnl. West Australia Chamber of Mines Nov. 1915; p 257; pp 4¼; 70c.

——— *Report of the Department of Mines, Pennsylvania,* 1914, *Part II.* [On the bituminous fields. Most of the information is in tabulated rather than descriptive form].—Pa. Dept. of Mines, Report 1914; pp 1057.

——— *Review of Coal Mining in* 1915. [Reviews by different authors for the producing states, giving production and general conditions of the industry therein. The transportation question is dealt with some, as is the question of accidents and safety].—Coal Age Jan. 8 1916; p 38; pp 21; 20c.

——— *The New Man Hoist at the Inspiration Con. Copper Co., Arizona.* [The hoist has a double-decked cage and is something similar to the elevators of big buildings].—Mg. World Mar. 18 1916; p 561; pp 1¾*; 10c.

——— *The Occurrence and Utilization of Zinc Ores.* [Takes up the sources from which zinc is obtained and discusses the production of the same].—Bull. Imperial Inst. Dec. 1915; p 611; pp 22¾; 75c.

——— *Transvaal Gold Output for* 1915. [Detailed figures and description of the situation are given].—S. Afr. Mg. Jnl. Jan. 15 1916; p 460; pp 2; 35c.

——— *Welfare and Safety-First Work in the U. S. Mines.* [A review of the subject for 1915].—Mg. World Jan. 1 1916; p 52; pp 1½*; 10c.

SOCIOLOGICAL

Fuetter, C. J.—*A Model Mine and Camp.* [Describes the Main Island Creek Coal Co. camp, W. Va., where much attention is being paid to up-to-date methods].—Coal Age Feb. 12 1916; p 290; pp 2¼*; 20c.

Hodgson, J. P.—*Coöperative Effort in Mining.* [Speaks of the relation of bosses and officials at the Copper Queen mine, Arizona].—Bull. A. I. M. E. May 1916; p 867; pp 3; 35c.

Ledoux, A.—*The German Invasion of Belgium, with Particular Reference to the Mining Industry.* [Discusses the effects of the invasion on production and imports and exports].—Canadian Mg. Jnl. Jan. 1 1916; p 3; pp 2¾; 35c.

Lohman, K. B.—*The Park Development Problems in the Hard Coal Region.* [Treats on things which should determine the nature and design of a park of this kind and gives a proposed plan for one to be shortly adopted].—Coal Age May 27 1916; p 914; pp 3¾*; 20c.

White, J. H.—*Welfare Work and Its Relations to Workmen's Compensation.* [A paper read before the Coal Mg. Inst. of America, in which it is argued that welfare work makes better employes and lessens accidents].—C. Tr. Bull. Jan. 15 1916; p 47; pp 4; 25c.

Willard, L.—*Some Adjuncts to Efficiency in Coal Mining.* [Considers the question in that better sociological conditions tend towards a higher degree of efficiency].—Coal Age April 22 1916; p 719; pp 2¼*; 20c.

——— *Report of the Department of Mines, Pennsylvania,* 1914, *Part II.* [On the bituminous fields. Most of the information is in tabulated rather than descriptive form].—Pa. Dept. of Mines, Report 1914; pp 1057.

ACCOUNTS AND BOOKKEEPING

Bromley, C. H.—*Engineers' Operating Data File.* [A file in which data regarding the sizes and kind of the various accessories and machines had in the plant may be kept and information thus serve as a ready reference].—Coal Age May 13 1916; p 833; pp 1¾*; 20c.

Chapman, J. E.—*Mine Accounting for Small Mines.* [A general discussion of the methods divided under subheadings].—Bull. A. I. M. E. Mar. 1916; p 663; pp 7; 35c. M. & S. P. Mar. 18 1916; p 400; pp 1; 20c.

Field, E. B.—*The Little Brass Check in the Crow's Nest,* Pennsylvania. [De-

scribes a system using brass checks for accounting for the number of cars a miner has taken out. They use purchased electric power].—Coal Age Mar. 18 1916; p 488; pp 2¼*; 20c.

Norton, T. H.—*The Potash Famine, Its Magnitude and Effects and Remedies Promised for the Future.* [Reproduced from the Scientific American].—Amr. Fertilizer Mar. 4 1916; p 21; pp 5*; 25c.

Roberts, E. I.—*Mine Warehouse System.* [On the careful arrangement of supplies and methods of accounting for them].—Coal Age Jan. 15 1916; p 115; pp 2½*; 20c.

Roberts, E. I.—*Coal-Mine Warehouse Systems—II.* [Gives convenient and efficient form blanks and a description of the results obtainable with them].—Coal Age Jan. 22 1916; p 154; pp 2¼; 20c.

Russell, H. A.—*Yearly Records of Quantities Purchased.* [To give data upon which the amount of future purchases may be made].—Iron Age Mar. 2 1916; p 539; pp 2¼*; 20c.

Thum, E. E.—*Cost-Accounting in the Construction and Operation of a Copper Smelter.* [In outline form a complete method of accounting and the same is described briefly].—Met. & Chem. Engg. May 1 1916; p 529; pp 4¾*; May 15 1916; p 573; pp 2½; June 1 1916; p 660; pp 2¾; 90c.

MINES AND MINING (c*)

CHAPTER XV.

PRODUCTION

Alderson, M. W.—*Mining Possibilities in Colombia, S. A.* [A description of the alluvial deposits is given, with details of operation at several properties. In discussing the good points and faults items of financial interest, production figures and costs are brought out].—Mg. World June 24 1916; p 1169; pp 3*; 10c.

Angwin, B.—*Cornish Mines During* 1915, *England.* [Gives the revenues, production and costs at the principal mines during 1915. Considerable of the information is in tabulated form].—Mg. Mag. April 1916; p 204; pp 2; 50c.

Arnold, Ralph.—*Conservation of the Oil and Gas Resources of the Americas.* [The occurrence and production from all the fields is discussed, with their reserves, so as to bring out the subject of conservation. Qualities of the various products are also given].—Eco. Geol. May 1916; pp 203; pp 20; 60c.

Barbour, P. E.—*General Review of Mining in the United States in* 1915. [Each state is taken up separately].—E. & M. J. Jan. 8 1916; p 105; pp 11; 25c.

Bliek, P. F.; Söhnlein, M. G. F.—*Bolivian Tin Mining in* 1915. [Brings out figures and information on the production and conditions in the field during the year. Particularly tin and copper].—E. & M. J. Jan. 22 1916; p 173; pp 2½*; 25c.

Brady, A. C.—*Mineral Output of New Mexico in* 1915. [Treats on the production in general and gives the production of the different counties by the value of the mineral mined].—Mg. World April 1 1916; p 656; pp 1; 10c.

Brooks, A. H.—*Mining in Alaska in* 1915. [Reprint of an advance report of the U. S. G. S. on the production and operations of the district in which the principal minerals are copper, gold, silver, antimony, tin and other unimportant ores].—M. & S. P. Jan. 8 1916; p 51; pp 6*; 20c. S. L. Mg. Rev. Feb. 15 1916; p 13; pp 4*; 25c.

Burchard, E. F.—*Fluorspar in* 1915. [The report shows that the production has materially increased and the imports decreased to nearly a negligible quantity].—Min. Res. of U. S. II:6, pp 9.

Burchard, E. F.—*Iron Ore Production Fourteen Million Tons Increase in* 1915. [Abst. from a U. S. G. S. Report. The situation is reviewed in detail for the several producing areas].—Mg. World June 10 1916; p 1089; pp 1½; 10c.

Burrows, J. S.—*Progress in the Export Trade.* [Although a decline was shown the business was increased with competitive markets and exports would have been higher except for transportation facilities].—Coal Age Jan. 8 1916; p 72; pp 1¾; 20c.

Caldecott, W. A.—*Some Features of the Rand Gold Mining Industry.* [A paper read before the S. Afr. Assn. for the Advancement of Science].—S. Afr. Mg. Jnl. Jan. 22 1916; p 490; pp 1; Jan. 29 1916; p 509; pp 1½; 70c.

Campbell, H. H.—*The Steel Industry of Great Britain.* [Treats on the importation of iron ores and production of steel. The larger steel centers are taken up separately].—Iron Age May 4 1916; p 1057; pp 2; 30c.

Chase, M. F.—*Advancement in the Metallurgy of Zinc.* [Brings out the conditions of the industry during the year and production figures with a table giving the capacity of zinc smelters in the U. S.]—Mg. World Jan. 1 1916; p 15; pp 2; 10c.

Clapp, F. G.—*Petroleum and Natural Gas Resources of Canada.* [Abst. from a 386 page Bull. of the Mines Branch. Speaks of the deposits in the several provinces and gives figures on their production].—Mg., Engg. & Elect. Rec. Feb. 1916; p 12; pp 1½; 35c.

Denis, T. C.—*Mining in Quebec During the Year* 1915. [Asbestos and various non-metallic products make up 91 per cent of the product and metals only 9 per cent].—Canadian Mg. Jnl. Jan. 1 1916; p 9; pp ¾; 35c.

Denis, T. C.—*Mining in the Province of Quebec During* 1915. [Gives general information and production of asbestos, chrome, sulphur, copper, zinc, lead, magnesite and other less important minerals].—Canadian Mg. Inst. Bull. Jan. 1916; p 12; pp 3½; 35c.

Dewey, H.; Bromehead, C. E. N.; Car-

*Includes the Production of Metals and Metal Ores, Non-Metals, etc.

ruthers, R. G.—*Special Reports on the Mineral Resources of England.* [Vol. I is on tungsten and manganese ores and Vol. II on the minerals barytes and witherite].—Geol. Surv. of England, London; book; 50c.

Dick, W. J.—*The Coal Situation in Canada.* [Abst. from a paper read before the Canadian Inst. of Mg. Eng.].—Coll'y Guard. April 7 1916; p 650; pp 1*; 35c.

Diller, J. S.—*Asbestos in* 1915. [Deals with production and conditions of the trade].—Min. Res. U. S. II:4; pp 6.

Engelder, O. G.—*Mining in Sardinia.* [A general account of the lead-zinc mines, their operation, production, etc. Labor, wages, etc., are spoken of and in this connection the law in regard to hiring and expelling employes is brought out].—M. & S. P. June 10 1916; p 862; pp 1; 20c.

Estep, H. Cole.—*Iron Range Developments in* 1915. [A review of operations in northern Michigan, Minnesota and Wisconsin, with a brief on the war's effects on labor].—I. Tr. Rev. Jan. 6 1916; p 81; pp 13½*; 60c.

Falck, G. E.—*I Forni Elettrici Nella Industria Metallurgica.* [On the production and operation of electrometallurgical steel plants].—Met. Italian Dec. 31 1915; p 751; pp 5; $1.

Foote, W. M.—*Unit and Content Prices of Tungsten and Other Rare Minerals.*—Mg. World Feb. 5 1916; p 279; pp ¾; 10c.

Fowler, Frank.—*Mining in British Guiana.* [Abst. from a report of the Commissioner of Land and Mines. Hydraulicking and dredging for gold and diamonds is reviewed and production figures given].—E. & M. J. April 22 1916; p 725; pp 1½; 25c.

Freeman, O. W.—*Gold Mining in the Judith Mountains, Montana.* [Briefs are given on some of the plants and mines. The gelogy and genesis of the ores and formation containing them is given, with a general topographic description of the country].—M. & S. P. June 10 1916; p 863; pp 2½*; 20c.

Geary, W. P.—*Mining, Australasia in* 1915. [On the gold, silver, copper, lead and tin industries and production].—E. & M. J. Jan. 8 1916; p 126; pp 2; 25c.

Gibson, T. W.—*Mineral Production of Ontario in* 1915. [From the annual Department of Mines report, Canada].—Canadian Mg. Jnl. Mar. 1 1916; p 110; pp 1; 35c.

Gibson, T. W.—*Mining in Ontario in* 1915. [A general review of gold, silver, copper, nickel and iron mining in the province during 1915].—E. & M. J. Jan 8 1916; p 121; pp 1¼; 25c.

Gibson, T. W.—*The Mining Industry of Ontario in* 1915. [Treats on the gold, silver, copper and nickel production of the province].—Canadian Mg. Inst. Bull. Jan. 1916; p 16; pp 4½; 35c.

Gray, F. W.—*Coal Production of Nova Scotia and the Effect of Recruiting.*—Canadian Mg. Jnl. Feb. 15 1916; p 91; pp 2; 35c.

Gray, F. W.—*Nova Scotia Coal Production During* 1915. [A preliminary estimate and talk on the subject].—Canadian Mg. Inst. Bull. Jan. 1916; p 10; pp 3; 35c.

Gray, F. W.—*The Coal Trade of Nova Scotia in* 1915. [Abst. from a provincial mines department report of Nova Scotia, and includes a table showing the production of operating coal companies from 1911 to 1915].—Canadian Mg. Jnl. Jan. 1 1916; p 6; pp 2¾; 35c.

Grosvenor, W. H.—*The New Place of Magnesium in Industry.* [A paper read before the American Electrochemical Soc. Its uses in alloys and as a scavenger in steel, with costs of making, production and some of its properties are given].—Iron Age Feb. 17 1916; p 434; pp 2; 30c.

Grosvenor, W. M.—*Magnesium.* [A general review of the metal, method of manufacture and production].—American Electrochem. Soc. Bull. p 163; pp 6; 35c.

Harder, E. C.—*Manganese Ores of Russia, India, Brazil and Chile.* [A paper published by permission of the U. S. G. S. Director. Gives the production, conditions of the markets, distribution of ores and nature of the same].—Bull. A. I. M. E. May 1916; p 761; pp 38*; 35c.

Hice, R. R.—*Oil and Gas Map of Southwestern Pennsylvania.* [A large map is given and accompanied with description of the wells in the district being considered, which includes figures on the production of the district and separate wells].—Pa. Geol. Surv. pp 22*.

Hice, R. R.—*The Mineral Production of Pennsylvania in* 1913. [Coal, coke, petroleum, natural gas, clay, mineral paints, and stone are reviewed in general and by counties as regards their production].—Pa. Geol. Surv. Report 11; pp 108.

Hill, J. M.—*Gold, Silver, Copper, Lead and Zinc in the Eastern States in* 1915. [The industry and production is reviewed separately for the entire group of states by metals and is later reviewed by states and counties].—Min. Res. of U. S. I:2; pp 14.

Hill, J. M.—*Notes on the Fine Gold of Snake River* [illegible]t. from a U. S.

G. S. Bull. Platinum is found. Production figures are given and a general geological description follows].—Mg. World Mar. 18 1916; p 563; pp 2½*; 10c.

Hobart, Frederick.—*Gold and Silver*, 1915. [Reviews the production and condition of the market, for the world by countries and by states for the U. S.].—E. & M. J. Jan. 8 1916; p 43; pp 1½*; 25c.

Hobart, Frederick.—*Iron and Steel*, 1915. [Production and general conditions for both the iron-ore and pig iron and steel industries are reviewed for U. S. and foreign countries].—E. & M. J. Jan. 8 1916; p 69; pp 2½; 25c.

Holiday, F. A.—*Uralsk Province, Russia, and Its Oil Fields.* [A description of the country, the wells, refineries, production, etc.].—Petro. World Jan. 1916; p 9; pp 4*; 35c.

Hore, R. E.—*The Canadian Mining Manual.* [An economic geological account of the minerals which are mined or found in Canada. Reports are then given of most of the Canadian mining companies, which are arranged alphabetically].—Mines Pub. Co., Toronto; book; pp 432*; $2.50.

Hutchins, J. P.—*Mining in the Russian Empire*, 1915. [Deals with dredging operations; the production of gold, platinum, petroleum, etc.; and labor conditions].—E. & M. J. Jan. 8 1916; p 124; pp 2½; 25c.

Ingalls, W. R.—*Spelter Statistics for* 1915. [Includes 1915 and 4 years previous].—E. & M. J. April 1 1916; p 606; pp 6; 25c.

Jacobs, E.—*Mining in British Columbia in* 1915. [Gold, silver, copper, lead, zinc and other less important minerals are reviewed].—Canadian Mg. Jnl. Feb. 1 1916; p 70; pp 2½; 35c.

Jacobs, E.—*Placer Gold Mining in British Columbia.* [A review of the production of gold from this source in general for the province and detail for the different sections].—Canadian Mg. Jnl. June 1 1916; p 274; pp 2¾; 35c.

Jacobs, E.—*The Slocan District, British Columbia, in* 1916. [Speaks of the different properties in the district and their production of silver, lead and zinc].—Canadian Mg. Jnl. Feb. 15 1916; p 98; pp 2¼; 35c.

Jamieson, C. E.—*Wyoming Oil and Coal Developments in* 1915.—S. L. Mg. Rev. Jan. 30 1916; p 11; pp 2*; 25c.

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Key, A. Cooper.—*Rand Mining in* 1915. [On the production of the gold industry and financial figures which show that the profits are about stationary, but dividends lessened].—E. & M. J. May 6 1916; p 809; pp 1¾*; 25c.

Krische, P.—*Die Kriegswirtschaftliche Bedeutung der Deutschen Kalidüngesalze.* .[The production, imports and exports of salts of potash and other elements during the war in Germany].—Kali Dec. 15 1915; p 373; pp 8¼; 35c.

Krusch, D. P.—*Die Nutzbaren Lagerstätten Serbiens und Ihre Wirtsschaftliche Bedeutung für die Zentralmächte.* [On the economic mineral deposits of Serbia].—Metall & Erz Feb 22 1916; p 69; pp 9*; 35c.

Lesher, C. E.—*Fuel Briquetting in* 1915. [Little difference was shown from 1914. The industry is still in its infancy].—Min. Res. of U. S. II:1; pp 6.

Liddell, D. M.—*Metallurgists' and Chemists' Handbook.* [Contains data, prices, production, methods of assay, analysis, cyanidation, ore-dressing, and information on fuels, refractories, design and construction, etc.].—McGraw-Hill; book; pp 603*; $4.

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Loughlin, G. F.—*Slate in* 1915. [The production decreased 13% during 1915].—Min. Res. of U. S. II:5; pp 13.

Luty, B. E. V.—*Connellsville and By-Product Coke Industries in* 1915. [An acceptance of by-product coke in iron establishments has placed this product in advance of the other grade].—Coal Age Jan. 8 1916; p 83; pp 1; 20c.

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Marriott, H. F.—*Transvaal Mining in* 1915. [Social and technical questions, including production of the diamond and gold fields of the country are considered].—S. Afr. Mg. Jnl. Feb. 26 1916; p 596; pp 2; 35c.

McCaskey, H. D.—*Gold and Silver in* 1914. [A general report on the industry, with short miscellaneous items on the mills and production of the country].—Min. Res. of U. S. I:23; pp 37.

McCaskey, H. D.—*Mineral Production of the United States in* 1914. [The subject is taken up separately by the minerals and collectively by production of the U. S.].—Min. Res. of U. S. I:A; pp 69.

McKirahan, S.—*Mining in Surinam, Dutch Guiana.* [Placer gold is found here. The article gives a good general description of the deposits and industry in general].—Pahasapa Qt'ly April 1916; p 26; pp 3¼; 50c.

McLeish, John.—*Annual Report on the Mineral Production of Canada,* 1914. [Each mineral is reported on separately. The imports, exports, production and condition of the trade are given].—Canada Dept. of Mines, Mines Branch, No. 384; pp 362.

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Morgan, P. G.; Bartrum, J. A.—*The Geology and Mineral Resources of the Buller-Mokihinui Subdivision, Westport Division, New Zealand.*—N. Z. Surv., Wellington; Bull. No. 17; pp 210*; 75c.

Middleton, J.—*Fuller's Earth in* 1915. [Treats on the occurrence, uses, production, the industry by states].—Min. Res. of U. S. II:3; pp 4.

Miller, W. G.—*Silver Deposits of the Cobalt District.* [Abst. from a report by the author, who is provincial geologist of Ontario. Considerable history of the camp is given and excellent views showing the nature of the formation are reproduced].—Canadian Mg. Jnl. June 15 1916; p 291; pp 7*; 35c.

Moulden, J. C.—*Zinc, Its Production and Industrial Applications.* [The different kinds of zinc are taken up and their uses reviewed. A separate table is given showing the many alloys and their proportions and followed by an account of zinc production for 1913 to 1845].—Jnl. of Royal Soc. of Arts June 2 1916; p 517; pp 15*; 35c.

Muth, E. G.—*Great Increase in Spelter Production.* [Reviews the general situation during 1915 and compares it with other nearby years].—Zinc & Lead Jnl. June 1916; p 5; pp 2½*; 20c.

O'Harra, C. C.—*Tungsten Production and Prices.* [Reviews the industry for the world, but more in particular for the Black Hills district of South Dakota].—Pahasapa Qt'ly Feb. 1916; p 9; pp 4; 35c.

Paul, H. W.—*Mining in Japan in* 1915. [Production and discussion are given on manganese, pyrite, sulphur, gold, silver, copper, coal and iron].—E. & M. J. Jan. 15 1916; p 133; pp 1½; 25c.

Petrascheck, W.—*Die Kohlenversorgung des Balkans.* [On the coal production and industry of the Balkan states].—Montanist. Rund. Mar. 1 1916; p 117; pp 5; 35c.

Pogue, J. E.—*The Emerald Deposits of Muzo, Colombia.* [A complete description covering history, geology, production mineralogy and genesis of the formation and deposits].—Bull. A. I. M. E.; May 1916; p 798; pp 24*; 35c.

Preston, T. H.—*The Urals and Their Mineral Wealth.* [Steel, copper, platinum, osmiridium and miscellaneous other minerals, are reviewed as regards their industry and production].—Mg. Mag. April 1916; p 197; pp 5; 50c.

Quin, L. H.—*Quin's Metal Handbook & Statistics,* 1916. [A compilation of statistics on production and prices].—Metal Information Bureau; London; book; $1.25.

Raefler, F.—*Die Brauneisenerzlagerstätten Oberschlesiens.* [Analyses, geology, mode of occurrence and production statistics are given for the iron fields of upper Silesia, Europe. The ore is hematite and limonite].—Berg & Hütt. Rund. Dec. 5 1915; p 11; pp 7; 35c.

Ralston, O. C.—*Statement of Flotation Oils—Market Situation Regarding Flotation Oils.* [A discussion of the market, consumption of oils for flotation, adaptability of the oils and cost of the different kinds].—Mg. World June 10 1916; p 1079; pp 1½; 10c.

Read, T. T.—*Economics of the World's Supply of Copper.* [A paper read before the International Engg. Congress].—M. & S. P. Jan. 15 1916; p 93; pp 1¾*; 20c.

Rickard, T. A—*The Re-Opening of Old Mines Along Mother Lode, California.* [Gives details on the history of present and historical companies. Figures on their production and methods of operation are given].—M. & S. P. June 24 1916; p 935; pp 5*; 20c.

Rochert, W. C.—*Review of Mining Operations in the Northern Mills, South Dakota.* [The history and production of the gold, silver and tungsten properties of the state are reviewed in detail, though briefly.—Pahasapa June 1916; p 49; pp 5*; 30c.

Sawhill, R. V.—1915 *Lake Superior Ore*

Shipments. [Is confined to iron ore. Figures show the production by properties and these are segregated according to the range on which they are located].—I. Tr. Rev. Mar. 16 1916; p 602; pp 4*; 25c.

Seaman, W. Y.—*The Lure of Cripple Creek Gold.* [A historic and current account of the gold deposits in this district. Production figures and descriptions of how many of the larger mines were discovered are given].—W. Y. Seaman, Denver; pp 48; 25c.

Sharp, Alexander.—*Mining Conditions in British Columbia.* [Speaks of the conditions in general and includes figures on the production of coal and placer gold].—Mg., Engg. & Elect. Rec. Feb. 1916; p 1; pp 4½; 35c.

Shelley, J. W.—*Graphite in Madagascar.* [Takes up geology, prospecting, mining, costs, labor conditions, production, law and a general description of the country and conditions to be found there].—Mg. Mag. June 1916; p 324; pp 7*; 50c.

Shurick, A. T.—*Business Aspects of the Coal Industry in* 1915. [Discusses the great revision of the trade channels and results which the war has produced in the market. Transportation is also considered].—Coal Age Jan. 8 1916; p 61; pp 3½; 20c.

Shurick, A. T.—*The Foreign Coal Fields.* [Deals with the coal production and conditions of the industry in various countries].—Coal Age April 29 1916; p 749; pp 4; 20c.

Siebenthal, C. E.—*Zinc and Cadmium in* 1914. [The production is taken up by countries for the world].—Min. Res. of U. S. I:24; pp 56.

Siebenthal, C. E.—*Lead and Zinc Resources of the United States.* [A paper read before the Pan-American Scientific Cong. on the production of the metals in general].—Mg. World Feb. 12 1916; p 355; pp 2¾; 10c.

Siebenthal, C. E.—*Lead in* 1914. [Production and operation in general and by states for both mines and smelters of U. S. and some foreign countries].—Min. Res. of U. S. I:22; pp 29.

Siebenthal, C. E.—*The Production of Spelter in the U. S. in* 1915. [Abst. from a final report of the U. S. G. S.].—Mg. World April 22 1916; p 785; pp 1⅓; 10c.

Singewald, J. T., Jr.; Miller, Benjamin.—*High Grade Manganese Ores of Brazil.* [The deposits of Minas Geraes, their occurrence and methods of operation, with figures on exports to the U. S. are given].—Iron Age Feb. 17 1916; p 417; pp 4*; 30c.

Skinner, W. R.—*The Mining Manual and Year Book,* 1916. [Alphabetical list and description of the larger companies of the world. A list of mining men, definition of terms and tables showing the production of gold and crushed ores produced from countries of the British Empire are given].—Financial Times, London; book; pp 957; $6.

Stansfield, Alfred.—*Electric Furnaces as Applied to Non-Ferrous Metallurgy.* [A paper read before the Institute of Metals on the use of the furnace for refining aluminum, magnesium, zinc, sodium, potassium, calcium, barium, strontium and cerium].—Mg. Jnl. April 8 1916; p 233; pp 2; 35c.

Stark, C. J.—*Development of Ferro Manufacture.* [Deals with the industry, its production and prices which have prevailed during previous years].—I. Tr. Rev. Jan. 6 1916: p 24; pp 4; 60c.

Stark, C. J.—*Renaissance of Eastern Ore Market.* [Takes up the situation of iron ore product which was being stocked in our eastern states and then readily consumed and a shortage in the product discovered].—I. Tr. Rev. Mar. 16 1916; p 585; pp 5*; 25c.

Stark, C. J.—*High Prices Bring Profits in East.* [On the production of the product from steel mills and furnaces].—I. Tr. Rev. Jan. 6 1916; p 19; pp 5*; 60c.

Stewart, A. K.—*The Geology and Mining Activities of Northern Ontario Mining Fields.* [A general review of the numerous camps in which the geology, financial and production figures are brought out].—Mg. World April 15 1916; p 733; pp 3*; 10c.

Straus, L. W.—*The Mineral Industry of Chile.* [In reviewing the conditions in general many figures on production, import and export are given].—M. & S. P. April 1 1916; p 475; pp 3¾*; 20c.

Wheler, A. S.—*Antimony Production in Hunan Province, South China.* [Describes the deposits; the method of mining and smelting the ore and gives figures on the production].—Bull. Inst. of Mg. & Met., London, No. 137; pp 14*; 50c.

Zalinski, E. R.—*Mining in Utah in* 1915. [Details on production and activities in gold, silver, zinc, copper and smelting industries].—E. & M. J. Jan. 15 1916; p 138; pp 2½; 25c.

Teil, B.—*Die Montanindustrie im Königreiche Polen.* [The coal mining industry in the kingdom of Poland].—Kohleninteressent April 15 1916; p 57; pp 2; 35c.

Velardez, Julio.—*El Petroleo del Comodoro Rivadavia.* [On the production and conditions of the industry in Peru and other parts of South America].—Inf. y Mem. Soc. Ing. Peru Dec. 1915; p 517; pp 8½; 75c.

Verne, C. E.—*Zinc's Record Breaking Production.* [A review of the production and prices for several years in the Joplin district].—Zinc & Lead Jnl. June 1916; p 3; pp 2*; 20c.

Willis, C. F.—*Mining in Arizona.* [Reviews the operation of the mines and production, principally copper and gold].—M. & S. P. Jan. 29 1916; p 171; pp 1½*; 20c.

Wittich, L. L.—*Joplin News-Herald's Zinc and Lead Handbook,* 1916. [Tables giving the zinc and lead production of the world and U. S. Production of ores in the Joplin and surrounding districts is also given].—Joplin News-Herald; book; pp 90*; 25c.

——— *Aluminum Production and Consumption in* 1915.—Mg. World Feb. 5 1916; p 269; pp ¾; 10c.

——— *Aus dem Jahrsbericht des Vereins für die Bergbaulichen Interessen im Oberbergamtsbezirk Dortmund für das Jahr* 1913. [From the state report on the operation and production of the iron and coal mines in Germany in 1913].—Zts. Oberschles. Berg & Hütten Vereins July 1914; p 290: pp 20; 50c.

———*Bericht des Vortandes des Oberschlesischen Berg-und Hüttenmännischen Vereins über die Wirksamkeit des Vereins im Jahre* 1913-14. [A state report on the operation and production of the mines and smelters of upper Silesia, which is mostly iron and coal land].—Zts. Oberschles. Berg. & Hütten-Vereins July 1914; p 281; pp 9; 50c.

——— *Conversaciones Sobre Contribuclon Minera.* [Some contributions and talks on the mineral industry of South American countries. Copper, lead and petroleum are the principal things considered].—Inf. y Mem. Soc. Ing. Peru. Dec. 1915; p 535; pp 26; 75c.

——— *Copper,* 1915. [One page is given to a general discussion of the industry for the world and the remaining 1½ pages reviews the market by months for the U. S.].—E. & M. J. Jan. 8 1916; p 48; pp 2½; 25c.

——— *Copper Production in the United States in* 1915.—Mg. World Feb. 5 1916; p 245; pp 9*; 10c.

——— *Cripple Creek Increases Its Gold Output by More Than* $1,500,000. [Reviews mineral production of gold for the state, but Cripple Creek principally].—Mg. Cong. Jnl. Jan. 1916; p 15; pp 2; 25c.

——— *Die Bergarbeiterlöhne im Salzbergbau in Preutzen im Letzten Vierteljahr* 1914 *und in den Beiden Ersten Vierteljahren* 1915. [The salt mining industry in Prussia in the last half of 1914 and the first half of 1915].—Kali Nov. 30 1915; p 381; pp 1½; 35c.

——— *Der Bergbau des Königreichs Sachsen im Jahre* 1914. [Production and operation of the mines in Saxony during 1914].—Glückauf Jan. 22 1916; p 71; pp 5; 50c.

——— *Gasoline Question.* [A general discussion on the same and its production, as well as that of petroleum in so far as it bears on the gasoline market.]—M. & S. P. May 20 1916; p 753; pp 3¾*; 20c.

——— *Iron Ore Production in* 1915. [An advance report of the U. S. G. S. reviewing the situation by districts separately].—Chem. Engg. June 1916; p 233; pp 1½; 35c.

——— *Italian Mineral Industry.* [Gives the production, prices, etc., prevailing in the several mineral industries of the country, principal of which are sulphur, zinc, iron ore, mercury and other less important minerals].—Mg. Jnl. April 29 1916; p 286; pp 2; 35c.

——— *Pig Iron Output Less.* [Gives the production by districts and collectively by months for U. S. A production curve is also given].—Iron Age May 4 1916; p 1088; pp 1½*; 30c.

——— *Lead and Zinc Industry in the United States.* [1915 and some of the previous years].—Mg. World Feb. 5 1916; p 254; pp 7*; 10c.

——— *Lead in* 1915. [A review of 1915, including the market, production, lead oxides, smelters and southeastern Missouri lead district].—E. & M. J. Jan. 8 1916; p 56; pp 5*; 25c.

——— *L'Industria Minerale Italiana nel* 1914. [Treats on the mineral industry and production in general for Italy during 1914].—Revista Sci. Jan. 25 1916; p 19; pp 2: 35c.

——— *Manganese Ore Production in* 1915.—Mg. World Feb. 5 1916; p 281; pp ½; 10c.

——— *Metal Output of the Central States.* [With some discussion the values and quantity of lead, zinc, silver and copper produced are given].—M. & S. P. June 3 1916; p 821; pp 1; 20c.

——— *Metals.* [Reviews the tin and copper industry and production with re-

spect to the British empire].—Mg. Jnl. Jan. 29 1916; p 65; pp 3¾; 35c.

——— *Mica Mining.* [A general review of the mica mining and marketing industry. Production, sorting and concentration of the raw material is briefly treated on and a chart is given showing the final subdivision of 1,000 lbs. of the raw material and what total amount will be obtained for different grades of the same].—M. & S. P. June 10 1916; p 866; pp 1; 20c.

——— *Mineral and Metal Production in United States in* 1915. [A general review].—Mg. World Feb. 5 1916; p 229; pp 2; 10c.

——— *Mineral Production of Canada in* 1915. [Abst. from a preliminary report of the Canada Department of Mines].—Mg. World Mar. 11 1916; p 523; pp 2¼; 10c. E. & M. J. Mar. 11; p 483; pp 2; 25c.

——— *Mining in Juneau, Alaska, in* 1915. [Speaks of the producing and developing mines of the district and reviews the production and conditions of the field as a whole].—E. & M. J. Jan. 15 1916; p 134; pp 2; 25c.

——— *Mining in Rhodesia.* [Mining and milling operations in the copper and gold fields, giving costs and figures on production].—E. & M. J. Jan. 15 1916; p 136; pp 1¼; 25c.

——— *Missouri's Mine Output in* 1915. [Abst. of an advance report of the U. S. G. S. Production figures are given and a review of the mine and smelter conditions and operations is made].—Mg. World June 17 1916; p 1128; pp ¾; 10c.

——— *Nova Scotia, Annual Report of the Mines,* 1915. [Coal and gold are the principal minerals of economic importance found there].—Nova Scotia Dept. of Mines report; pp 181.

——— *Portland Cement Industry in* 1915.—Mg. World Feb. 5 1916; p 282; pp ¾; 10c.

——— *Potash Industry in* 1915.—Mg. World Feb. 5 1916; p 282; pp ½; 10c.

——— *Production of American Mines Reaches Highest Point in* 1915. [Copper, iron and zinc show the largest gain].—Mg. Cong. Jnl. Jan. 1916; p 9; pp 2; 25c.

——— *Production of Antimony Ores in* 1915.—Mg. World Feb. 5 1916; p 280; pp ¾; 10c.

——— *Production of Coal and Coke in Canada in* 1914. [Mostly on coal with the discussion divided into provinces].—Canada Dept. of Mines, Report 348; pp 39.

——— *Production of Coke and Briquettes in the United Kingdom in* 1914.—I. & C. Tr. Rev. Jan. 7 1916; p 1; pp⅝; 35c.

——— *Production of Gold in the United States in* 1915.—Mg. World Feb. 5 1916; p 234; pp 5*; 10c.

——— *Prosperous Year for Mines of the U. S.* [Abst. from the mid-year report of the U. S. G. S. on the production of copper, iron, zinc, silver and gold].—Mg. World Jan. 1 1916; p 51; pp 1½; 10c.

——— *Profits and Ore Reserves of the Government Areas, South Africa.* [The distribution and general conditions of the government lands are given].—S. Afr. Mg. Jnl. Feb. 19 1916; p 575; pp 1¼*; 35c.

——— *Queensland Mining Industry.* [A review of 1915 made by the Under-Secretary for Mines. The condition of all things related to this department are taken up, including the production and condition of the several metal mining industries].—Queen. Govt. Mg. Jnl. Mar. 15 1916; p 101; pp 17; 35c.

——— *Quicksilver Output in the United States in* 1915.—Mg. World Feb. 5 1916; p 273; pp ¾; 10c.

——— *Radium, Vanadium and Uranium in* 1915.—Mg. World Feb. 5 1916; p 281; pp ½; 10c.

——— *Rand Mining Figures for* 1915. [A review of the production from this field].—S. Afr. Mg. Jnl. Feb. 5 1916; p 527; pp 1½; 35c.

——— *Ray Consolidated Copper Co., Arizona.* [Abst. from annual report. Information on mining and milling costs, reserves and production].—E. & M. J. April 22 1916; p 738; pp 1¼; 25c.

——— *Reviews of Coal Mining in* 1915. [Reviews by different authors for the producing states, giving production and general conditions of the industry therein. The transportation question is dealt with some, as is the question of accidents and safety].—Coal Age Jan. 8 1916; p 38; pp 21; 20c.

——— *Rhodesia Chamber of Mines, Report of the Executive Committee.* [In tabulated form the gold production for the different companies and districts, is given].—Rhodesia Chamber of Mines; Mar. 1916; pp 5; 35c.

——— *Rhodesia Production of Gold in February* 1916. [The production of the various mines in southern Rhodesia is tabulated].—Report of Executive Com. Feb. 1916; pp 6; 50c.

——— *Report of the Department of Mines, Pennsylvania.* [Gives the steps

taken towards safety and sanitation and preventing accidents, with an account of those which occurred. Tables on the production of the various coal mines are given and show the collective production of the districts and state].—Dept. of Mines, Pa., 1914; pp 614.

——— *Report of the Department of Mines, Pennsylvania,* 1914, *Part II.* [On the bituminous fields. Most of the information is in tabulated rather than descriptive form].—Pa. Dept. of Mines, Report 1914; pp 1057.

——— *Silver Production in the United States in* 1915.—Mg. World Feb. 5 1916; p 240; pp 1½*; 10c.

——— *South America in* 1915. [A review of the progress of various companies and their doings during 1915].—E. & M. J. Jan. 8 1916; p 118; pp 2¼; 25c.

——— *Southern Rhodesian Mining.* [Gives the production of minerals and metals from that country].—S. Afr. Engg. April 1916; p 61; pp 1; 35c.

——— *The Coal Industry of the United States in* 1915. [Takes up the situation in general and separately for the producing states].—Mg. World Feb. 5 1916; p 274; pp 2¾*; 10c.

——— *The Iron and Steel Industry in* 1915. —Mg. World Feb. 5 1916; p 266; pp 3½*; 10c.

——— *The Metals.* [A review of the general conditions and production in the lead and spelter industries of the world]. —Mg. Jnl. Feb. 5 1916; p 82; pp 3; 35c.

——— *The Petroleum Industry in the United States.* [Reviews the industry for 1915 by states and districts].—Mg. World Feb. 5 1916; p 270; pp 3*; 10c.

——— *The Union Tin Industry in* 1915, *South Africa.* [Gives the operation of companies and cost of tin plant in these placer fields].—S. Afr. Mg. Jnl. Dec. 18 1915; p 367; pp 1; 35c.

——— *The World's Copper Production in* 1915.—Mg. World Feb. 5 1916; p 242; pp 3*; 10c.

——— *The World's Gold Product in* 1915.—Mg. World Feb. 5 1916; p 2[illegible] pp 3*; 10c.

——— *The World's Production of Silver in* 1915.—Mg. World Feb. 5 1916; 239; pp 1½; 10c.

——— *Tin.* [A general review of t situation in this industry with figures production in many instances].—Mg. J April 8 1916; p 231; pp 1¼; 35c.

——— *Tin Industry and Consumpti in* 1915. [Takes up the conditions wi special reference to United States].—M World Feb. 5 1916; p 277; pp 1¾*; 10c.

——— *Tungsten Industry and Produ tion in* 1915.—Mg. World Feb. 5 1916; 279; pp 1; 10c.

——— *Uebersicht über den Oberschle ischen Steinkohlen, Brikett und Kok Versand nach den einzelnen Station des in und Auslandes.* [Gives the produ tion imports and exports of coal, coke ar briquettes in upper Silesia and other stat of Germany. It is arranged in tab form].—Zts. Oberschles. Berg & Hütte Vereins Sept. 1914; p 344; pp 16; 50c.

——— *Utah Copper Co., Utah.* [Abs from annual report. Mill and mine ope ations are given with costs and produc tion for the same. Figures of intere in operating and finances are also given —E. & M. J. April 22 1916; p 783; p 1¾; 25c.

——— *Year Book for* 1910 *of the Illi nois Geological Survey.* [Includes the Ad ministrative report and various economi geological papers].—Ill. Geol. Surv. Bul 20; pp 165*.

——— *Zinc in* 1915. [Wisconsin, Jop lin, Siberia and U. S. in general are con sidered, giving prices which prevailed an production. The spelter market is re viewed in considerable detail by quarter year periods].—E. & M. J. Jan. 8 1916 p 61; pp 5½; 25c.

——— *World's Supply of Potash.*— Imperial Inst. London; 35c.

MILL AND MILLING.

CHAPTER XVI.

SAMPLING

Elder, R. B.—*An Automatic Pulp Sampler.* [Consists of a wheel inserted in the main flow which throws some of the pulp to a by-pass for a sample].—E. & M. J. Mar. 18 1916; p 524; pp 2¼*; 25c.

Fulton, C. H.—*The Sampling, Buying and Selling of Ores.* [Abst. from a U. S. Bureau of Mines Tech. Paper].—Mex. Mg. Jnl. Mar. 1916; p 77; pp 2½; 35c.

Hance, J. H.—*Segregation in Gold Bullion.* [A paper read before the A. I. M. E. on sampling bullion bars to avoid the error due to segregation of the metal].—Mg. World Mar. 25 1916; p 601; pp ¾; 10c.

Kreisinger, Henry; Ovitz, F. K.—*Sampling and Analyzing Flue Gases.* [Complete details of methods and apparatus are given for analyzing gases for their components].—U. S. Bur. of Mines Bull. 97; pp 70*.

Lamble, B. C.—*The Sampling and Assaying of Molybdenum Ores.* [The methods here given are those practiced by the Orillia Molybdenum Co., Ont.].—Canadian Mg. Jnl. April 15 1916; p 185; pp 1¼; 35c.

Liddell, D. M.—*The Metallurgist and Chemists' Handbook.* [Contains the usual handbook data on chemistry and methods for both the cyanide and other hydrometallurgical processes, besides thermic metallurgy].—McGraw Hill Book Co.; book; pp 603*; $4.

Smith, C. E.—*Some Sources of Error in the Iodometric Determination of Copper.* [A method for chemical analysis and correct methods of obtaining the sample].—Met. & Chem. Engg. April 1 1916; p 379; pp 1¼; 30c.

Trewartha-James, W. H. — *Taylor's Pulp Sampler.* [Describes the apparatus and shows drawings of the same. Some discussion is given regarding its use].—Inst. of Mg. & Met. Bull. 136; pp 6*; 50c.

CRUSHING, GRINDING, ETC.

Austin, L. S.—*The Washoe Reduction Works, Anaconda.* [The concentration in classifiers, tables, etc., is described in detail and then their new flotation process is taken up].—M. & S. P. Feb. 26 1916; p 304; pp 6*; 20c.

Baechtold, C. A.—*New Handling Plant of the Temescal Rock Co., Corona, Cal.* [Storage hoisting, crushing and haulage of the rock are described in fair detail].—Mg. World Mar. 18 1916; p 557; pp 2½*; 10c.

Brodie, W. M.—*Metallurgy of Native Silver Ores of Southwestern Chihuahua, Mexico.* [A paper read before the Pan-American Scientific Cong. History, smelting, concentrating, cyaniding, amalgamation, occurrence and crushing are taken up].—E. & M. J. Feb. 12 1916; p 297; pp 5*; 25c.

Bulkley, Norman.—*Application of Electric Power to Mining Work in the Witwatersrand Area, South Africa.* [A complete description of the use of electricity for crushing, milling, air compressing, hoisting, etc. A comparison is made between the steam and electric power costs, and charts and drawings of arrangements are given].—A. I. M. E. Bull. Feb. 1916; p 355; pp 19*; 35c. S. Afr. Mg. Jnl. Mar. 18 1916; p 672; pp 1; 35c.

Carpenter, A. B.—*The Temescal Rock Company Near Corona, California.* [Describes the handling and crushing of the rock].—Mg. & Oil Bull. Mar. 1916; p 83; pp 3*; 25c.

Cutler, H. C.—*Stamps and Competitive Machinery.* [On the evolution from the stamp to the ball and other types of crushing mills].—M. & S. P. Feb. 5 1916; p 204; pp 3; 20c.

Del Mar, Algernon.—*Some Points in the Operation of Tube Mills.* [Results of the author's experience in this practice].—Mg. & Oil Bull. Jan. 1916; p 39; pp 3*; 25c.

Del Mar, Algernon.—*The Year's Changes in Crushing and Grinding.* [A description of changes and present-day crushing methods preliminary to cyanidation].—Mg. World Jan. 1 1916; p 50; pp 1; 10c.

Durham, E. B.—*Gold-Milling in Amador, California.* [A number of mills in the district have their crushing and concentrating operations briefly described].—M. & S. P. Feb. 26 1916; p 301; pp 3*; 20c.

Eddy, L. H.—*Jigs on a California Dredge.* [Hardinge mills and Neill jigs are used here with the latter placed in the sluices, and they have shown an ad-

vance in this kind of mining, as well as a saving].—E. & M. J. Jan. 29 1916; p 208; pp 1¾*; 25c.

Gudgeon, C. W.—*The Scheelite-Gold Mines of Otago, New Zealand.* [The geology is taken up and several properties described. Mill flow-sheets and milling and mining costs are given, besides a brief on a wet method for assaying pyritic scheelite for tungsten].—Proc. Aus. Inst. M. E.; N. S. No. 21 1916; p 37; pp 14*; 65c.

Hanson, Henry. — *Fine Grinding: Stamps and Ball-Mills.* [A general talk on several points having to do with fine grinding].—M. & S. P. May 13 1916; p 701; pp 3; 20c.

Hicks, H. L.—*Quarrying at Rockland Lake, New York.* [The haulage, drilling and power equipment and operations are described in a general way].—Engg. & Cont. June 7 1916; p 512; pp 1¾*; 20c.

Hill, L. G.—*The Advantages of Extremely Fine Grinding of Materials Used in Producing Articles of a Different Nature to That of the Original Material.* [Confined more to operations in making pottery and other ceramic articles].—Trans. Eng. Ceramic Soc. 1914-15; p 62; pp 18*; 65c.

Keiser, W. G.—*Dry Placer Mining on a Large Scale.* [A general account of placer operations in Yuma county, where dry concentration is employed. The plants used are known as Quenner-Stebbins plants].—Mg. World May 27 1916; p 999; pp 1½; 10c.

Keith, N. S.—*Another and Earlier Ball-mill.* [Historic experience of the author with ball-mills in Colorado as far back as 1863].—M. & S. P. Jan. 29 1916; p 157; pp 1; 20c.

Labbe, Charles.—*Installation of Tube Mills.* [Methods of lining in and accurately setting the tube mill].—E. & M. J. April 29 1916; p 777; pp 1¾*; 25c.

Laist, F.; Wiggin, A. E.—*The Remodeled Anaconda Concentrator as Adapted to Flotation, Montana.* [A paper read before the A. I. M. E. Describes the machinery and equipment briefly and follows the ore through the mill in its course of treatment. Tables of data obtained are contained].—Mg. World Mar. 4 1916; p 471; pp 7½*; 10c. Canadian Mg. Jnl. Mar. 1 1916; p 113; pp 3; 35c.

Liddell, D. M.—*The Metallurgist and Chemists' Handbook.* [Contains the usual handbook data on chemistry and methods for both the cyanide and other hydrometallurgical processes besides thermic metallurgy].—McGraw Hill Book Co.; *book;* pp 603*; $4.

Mathewson, E. P.—*Recent Improvements in Concentration at the Washoe Reduction Works, Anaconda, Montana.* [A general detailed description of the crushing and concentration operations in connection with flotation. A flow sheet is given].—Canadian Mg. Inst. Bull. June 1916; p 560; pp 9*; 35c.

McClaren, Alexander.—*Chilean Mills Versus Stamps.* [Compares the results and applicability of the types of crushing apparatus].—E. & M. J. Jan. 1 1916; p 15; pp 2; 25c.

Mills, L. D.; Kuryla, M. H.—*Crushing and Grinding.* [A paper read before the A. I. M. E. Crushing costs, applicability of different kinds of crushing, with discussion of the same and a general review of crushing machinery are given].—Mex. Mg. Jnl. May 1916; p 173; pp 3; 35c.

Moyle, E. H.—*An Improved Circular-Feed, All-Screen Mortar for Stamp Mills.* [The mortar has a large screen area which allows the product to escape when crushed to size and not become slimed by further crushing].—Mg. World April 1 1916; p 653; pp 2¾*; 10c.

Palmer, L. A.—*The Central Mill of the North Star Mines Co., California.* [Gives considerable detail on the crushing, concentration, amalgamation, slime treatment and milling costs].—Met. & Chem. Engg. Jan. 1 1916; p 35; pp 3¾*; 30c.

Parmelee, H. C.—*Recent Practice in Concentrating Colorado Tungsten Ores.* [Treats on both crushing and concentrating of the ores].—Met. & Chem. Engg. Mar. 15 1916; p 301; pp 3*; 30c.

Peckham, A. B.—*Cyanidation at the Comacaran Mine, Salvador.* [Gives detailed information on the crushing, cyanidation, slime treatment, precipitation, clarification and sand treatment of the gold ores].—M. & S. P. April 29 1916; p 639; pp 2¾*; 20c.

Randall, C. A.—*Metallurgy at Tough-Oakes Gold Mines, Ltd., Ontario.* [The description is very complete and gives a large amount of specific data, assays, results of tests, etc.].—Canadian Mg. Jnl. May 1 1916; p 225; pp 5*; 35c.

Ritter, E. A.—*Recent Milling Practice in San Juan County, Colorado.* [Gold and silver ores with base metals are found. Brief descriptions of most of the important milling plants are given and one flotation plant is described].—Mg. World Jan. 15, 1916; p 111; pp 6½*; 10c.

Rose, C. A.—*Metallurgical Operations at the Chile Exploration Co.* [A paper read before the Pan-American Scientific Cong. A complete description with draw-

ings of their crushing and leaching plants].—E. & M. J. Feb. 12 1916; p 321; pp 5½*; 25c.

Rose, T. K.—*The Metallurgy of Gold.* [Separate chapters take up subjects related to gold as: Methods of extraction, concentration, alloys, chemistry, placer deposits, crushing, geology, assaying, etc. Reasons for, rather than a bare explanation is the policy].—J. B. Lippincott Co.; pp 601*; book; $6.50.

Saint-Smith, E. C.—*Boulder West Mine, Gurrumbah, Queensland.* [A report of the geology and treatment of the ore made by the government].—Queen. Govt. Mg. Jnl. Feb. 15 1916; p 55; pp 2½*; 35c.

Scott, W. A.—*Mill Equipment of the Engels Copper Co., California.* [Mineral Separation Co.'s flotation cells are used. Crushing and classifying are described and the mill handles about 500 tons].—Mg. World June 24 1916; 1165; pp 2*; 10c.

Scott, W. A.—*Milling and Smelting at Humboldt, Arizona.* [The plant of the Consolidated Arizona Smelting Co. is reviewed, including its crushing, concentration, flotation and smelting equipment and operations].—Mg. World June 17 1916 p 1133; pp 1¼*; 10c.

Taggart, A. F.; Young, R. W.—*Grinding Brass Ashes in the Conical Ball Mill.* [In working this alloy ashes consist of slag, sweepings, overflow from the molds, etc. Tests are described on grinding the ashes previous to concentrating on tables]. A. I. M. E. Bull. Feb. 1916; p 435; pp 8*; 35c. I. Tr. Rev. Feb. 24 1916; p 440; pp 3*; 25c.

Todd, R. B.—*The Nevada Packard Mill.* [The crushing and cyanide operations are described as followed for treating the ore which is principally silver].—E. & M. J. Feb. 5 1916; p 247; pp 1¾*; 25c.

Watts, A. S.—*The Feldspars of the New England and North Appalachian States.* [Contains description of the geology and separate descriptions of the quarries. Tests for the feldspar are given, as are methods of quarrying, pumping, crushing, concentration, etc].—U. S. Bur. of Mines Bull. 92; pp 181*; 35c.

Weeks, C. F.—*A Rock-Drill Stamp-Mill.* [The ordinary rock-drill is placed in a vertical position with the piston end in a mortar. It will handle a ton of quartz in 14 hours through a No. 1 screen.].—M. & S. P. Jan. 29 1916; p 161; pp 1*; 20c.

Wherry, H. P.—*Concentration of Zinc Ore in Wisconsin.* [A complete description and discussion of the new and old system used at the Thompson mine of the Field Mg. & M. Co. Flow sheets are given with the results of tests on which were based certain selections made].—M. & S. P. April 22 1916; p 587; pp 5½*; 20c.

Wiard, E. S.—*The Grading Industries.* [Treats on the use of revolving screens, trommels, volumetric grading, etc.].—Met. & Chem. Engg. May 1 1916; p 529; pp 4¼*; 30c.

Willard, C. G.—*The Golden Reward Roaster, South Dakota.* [A brief description, with details on the crushing and roasting of the ores preliminary to cyanidation. Sulphur is reduced from an average of 6% to less than 1%].—Pahasapa June 1916; p 40; 6*; 30c.

———*Cyaniding by Continuous Decantation at Two Nevada Silver Mills.* [Pittsburgh-Dolores and Rochester are the mills here described. Costs and methods of operation are given].—Met. & Chem. Engg. April 15 1916; p 435; p 5¼*; 30c.

——— *Electric Power for Public Works as Brought Out at the Wilson Ave. Tunnnel, Chicago.* [A complete description of electric power used in the tunnel is given. Electricity is here used for hoisting, air compression, rock crushing, haulage, ventilation and lining the tunnel with concrete].—Elect. Rev. & West Elect. June 3 1916; p 1017; pp 6¾*; 20c.

——— *Mining Manganese Ore in Virginia.* [Open pit operations are followed and the methods of crushing and washing the clay-like ore obtained are described].—Iron Age Mar. 30 1916; p 776; pp 2*; 30c.

——— *Mining in the Philippine Islands.* [Gold mining and dredging are carried on. The new Benguet mill, which will use sliming cyanide process and be operated by electricity, is described].—Mex. Mg. Jnl. Jan. 1916; p 13; pp 1½; 35c.

——— *New York and Honduras Rosario Mining Co., Central America.* [Abst. from the company's report describing the mill and power plant on the property].—Mex. Mg. Jnl. Feb. 1916; p 53; pp 4¼*; 35c.

——— *The Chontalpan Mill, Guerrero, Mexico.* [The cyanide process is used on ores of clean quartz carrying silver sulphide, lead and iron].—Mex. Mg. Jnl. 1916; p 5; pp 1½*; 35c.

FLOTATION

Anderson, R. J.—*Oils and Other Reagents in Flotation.* [A paper read be-

fore the A. I. M. E. on the adaptability of various oils, acids, etc.].—Met. & Chem. Engg. Feb. 1 1916; p 135; pp 1¾; 30c.

Anderson, R. J.—*Recent Progress in Flotation.* [Information on the subject gathered from several different sources].—Jnl. Frank. Inst. May 1916; p 643; pp 16; 60c. Chem. Eng. May 1916; p 183; pp 5¾; 35c.

Anderson, R. J.—*The Metallurgical Disposal of Flotation Concentrates.* [Deals with the skimming and smelting of the concentrates].—Met. & Chem. Engg. April 1 1916; p 381; pp 2¼; 30c.

Austin, L. S.—*The Washoe Reduction Works, Anaconda.* [The concentration in classifiers, tables, etc., is described in detail and then their new flotation process is taken up].—M. & S. P. Feb. 26 1916; p 304; pp 6*; April 15 1916; p 547; pp 9*; 40c.

Avery, P. W.—*Cyanidation of Flotation Concentrates.* Discussion giving detailed figures on the item considered].—M. & S. P. May 6 1916; p 661; pp 1¼; 20c.

Bancroft, W. D.—*Ore Flotation.* [A paper read before the A. I. M. E. Treats in general on the more simple theory regarding flotation and the phenomena on which it is dependent].—Met. & Chem. Engg. June 1 1916; p 631; pp 4¾; 30c.

Browne, D. H.—*Notes on the Metallurgy of Copper.* [Current literature from several sources on operations at the larger copper mines of the world].—Canadian Mg. Inst. Bull. May 1916; p 458; pp 6½; 35c.

Clayton, C. Y.; Peterson, C. E.—*Oils for Flotation.* [Describes tests made on a large number of oils at the laboratory of the Missouri School of Mines. The log-sheets showing the results of these tests as taken are given].—M. & S. P. April 22 1916; p 598; pp 4*; 20c.

Coghill, W. H.—*On the Science of Froth.* [On the theory of floating of the particles and surface tension which has to do with the same].—M. & S. P. Feb. 26 1916; p 314; pp 3; 20c.

Cole, A. A.—*Concentration of Cobalt Silver Ores by Oil Flotation.* [Extract of a report to the T. & O. Ry. commission. A reprint is shown of the Buffalo Mines, Ltd., flotation plant flow sheet].—Canadian Mg. Jnl. June 15 1916; p 301; pp 1; 35c.

Cole, David.—*The Electric Theory of Flotation.* [His observations were made with copper sulphide ores of Butte, Montana].—M. & S. P. Jan. 15 1916; p 79; pp 2; 20c.

Delano, L. A.—Flotation Practice in Missouri. [A description of flotation at the Bonne Terre mill of the St. Joseph Lead Co. Details on operation and machine construction and equipment are given].—M. & S. P. April 29 1916; p 633; pp 1; 20c.

Douglass, R. E.; Colley, B. T.—*Metallurgical Operations of the Braden Copper Co., Chile.* [A paper read before the Pan-American Scientific Cong. Descriptions of various operations in concentration, flotation and smelting are given].—E. & M. J. Feb. 12 1916; p 315; pp 6½*; 25c.

Drucker, A. E.—*Machinery for Cyaniding Flotation Concentrate.* [A general discussion with a typical flow sheet for such a plant].—M. & S. P. April 8 1916; p 517; pp 2¼*; 20c.

Durell, C. T.—*Flotation Principles.* [A combination of information from several sources].—M. & S. P. Feb. 19 1916; p 273; pp 6¾; 20c.

Durell, C. T.—*Universal Flotation Theory.* [A description of flotation theories and operations].—Colo. School of Mines Qrtly. Feb. 1916; p 27; pp 7½; 35c. Met. & Chem. Eng. Mar. 1 1916; p 251; pp 5½; 25c. Canadian Mg. Jnl. April 1 1916; p 170; pp 3; 35c.

Dwyer, C. E.—*Tonnage Formulas.* [A chart combining tons of feed, acid used and oil used].—M. & S. P. May 20 1916; p 737; pp 1¼*; 20c.

Fahrenwald, F. A.—*The Electro-Statics of Flotation.* [Concentration by the development of positive and negative electricity in the different parts of the ore].—M. & S. P. Mar. 11 1916; p 375; pp 4*; 20c.

Free, E. E.—*Colloids and Colloidal Slimes.* [A detailed description of what colloids are and the theory connected with them, which is of importance in all milling, cyanide and flotation operations].—E. & M. J. Feb. 5 1916; p 249; pp 5; 25c.

Free, E. E.—*Sedimentation and Flocculation.* [On the floating of certain parts of slimed materials].—E. & M. J. Mar. 18 1916; p 509; pp 4¼; 25c

Hamilton, Fletcher.—*Concentration of Quicksilver Ores in California.* [Tests are being made as to the applicability of concentrating before the thermic treatment. High extraction by water concentration and flotation is claimed].—Mg. World May 27 1916; p 997; pp 1; 10c.

Hatschek, E.—*An Introduction to the Physics and Chemistry of Colloids.* [Describes the theory of the phenomena of colloids in detail, and is of use in experimental work with flotation].—Blakiston's Sons, Phil.; book; pp 107*.

Ingalls, W. R.—*Electrolytic Zinc.* [A paper read before the American Chem-

ical Society. Electrolytic refining of zinc and the relation of flotation to zinc metallurgy are taken up].—E. & M. J. Mar. 4 1916; p 425; pp 4¼; 25c.

Higgins, W. C.—*Development and Equipment of the Walker Copper Mine, California.* [Mine development and milling operations are described. A table itemizing the production cost is also given].—S. L. Mg. Rev. Mar. 30 1916; p 11; pp 3*; 25c.

Laist, F.; Wiggin, A. E.—*Flotation Concentration at Anaconda, Mont.* [Follows the ore through the process, describing in detail the operations at each point].—Bull. A. I. M. E. Mar. 1916; p 549; pp 33*; 35c. Canadian Mg. Jnl. Mar. 1 1916; p 113; pp 3; 35c. Mg. World Mar. 4 1916; p 471; pp 7½*; 10c.

Layng, H. R.—*Cyanidation of Flotation Concentrates.* [Contains discussion on a recent paper on the subject in the form of correspondence].—M. & S. P. June 3 1916; p 813; pp ¾; 20c.

Lohr, F. D.—*Oil Flotation and Copper Leaching at the Washoe Smelter.* [For the most part a description of the new leaching and flotation plants, with some discussion].—Wis. Eng. Jan. 1916; p 166; pp 6; 35c.

Magnus, B.—*The Sintering of Flotation Concentrates.* [Deals with the operation at Mount Morgan, Queensland, Australia. The ores contained about 2% copper and 7 dwt. gold. Dwight-Lloyd sintering machines were used].—E. & M. J. June 10 1916; p 1032; pp ¾*; 25c.

Martin, A. H.—*The Flotation Process at Goldfield, Nevada.* [A concise detailed description of the plant equipment, operation and results obtained. Callow pneumatic flotation cells are used].—Mg. World June 3 1916; p 1041; pp 1¼; 10c.

Mathewson, E. P.—*Recent Improvements in Concentration at the Washoe Reduction Works, Anaconda, Montana.* [A general detailed description of the crushing and concentration operations in connection with flotation. A flow sheet is given].—Canadian Mg. Inst. Bull. June 1916; p 560; pp 9*; 35c.

Megraw, H. A.—*Progress of Flotation in* 1915. [A mixed review of flotation principles and progress made in this method during the year].—E. & M. J. Jan. 8 1916; p 97; pp 3*; 25c.

McClave, James.—*Difficulties Encountered in Making Oil Flotation Tests.* [A general discussion on the practice of testing oils for use in flotation].—Mg. World June 17 1916; p 1135; pp ¾; 10c.

Norris, D. H.—*Molecular Forces in Flotation.* [Deals with surface compression].—M. & S. P. Feb. 12 1916; p 232; pp 4½*; 20c.

Ostwald, W.—*A Handbook of Colloid-Chemistry: The Recognition of Colloids, the Theory of Colloids and Their Chemico-Physical Properties.* [The book was translated from the German by M. H. Fischer].—P. Blakistons Sons & Co., Philadelphia, Pa.; book; pp 266*; $3.

Parmalee, J. G.—*Flotation Process at the Standard Mill, Silverton, B. C.* [The ores are zinc-lead containing much leaf silver. The Wyman pneumatic flotation machine is shown and described in detail. Assays of the concentrates are given, with details of mill operation and flow sheet].—Mg. World June 17 1916; p 1121; pp 3*; 10c.

Parsons, A. B.—*Flotation at the Silver King and Daly Judge, Utah.* [A general description and discussion of operations at the two mills].—S. L. Mg. Rev. Feb. 29 1916; p 11; pp 4*; 25c.

Ralston, O. C.—*Statement of Flotation Oils—Market Situation Regarding Flotation Oils.* [A discussion of the market, consumption of oils for flotation, adaptability of the oils and cost of the different kinds].—Mg. World June 10 1916; p 1079; pp 1½; 10c.

Ralston, O. C.—*The Control of Ore Slimes.* [Published by permission of the U. S. G. S. Treats on the colloidal properties of slimes and other of their peculiarities which often affect their successful treatment].—E. & M. J. April 29 1916; p 763; pp 6¼*; 25c.

Ralston, O. C.; Allen, G. L.—*Testing Ores for Flotation Process.* [Describes tests to be made on ores for flotation].—M. & S. P. Jan. 1 1916; p 8; pp 6*; Jan. 8 1916; p 44; pp 5*; 40c.

Rickard, T. A.—*The Flotation Process, Its Physics.* [Read before the Canadian Inst. of Mining Engineers. A talk on the physics of the colloidal properties of the ores].—M. & S. P. Mar. 4 1916; p 333; pp 3¾*; Mar. 18 1916; p 407; pp 7*; 40c.

Rickard, T. A.—*The Flotation Process.* [A compilation of articles from different sources which appeared during 1915 in the M. & S. P. Electrostatic theories and methods are described with pneumatic and other methods. Methods of testing ores are also given in some papers].—M. & S. P.; book; pp 364*; $2.

Rickard, T. A.—*The Flotation Process Patents.* [Describes a number of recent and antiquated patents].—M. & S. P. April 1 1916; p 469; pp 5¾*; 20c.

Rigg, Gilbert.—*A Dissertation of Flotation.* [A lecture presented with experi-

ments to the A. I. M. E.].—E. & M. J. Feb. 26 1916; p 382; pp 2; 25c.

Ritter, E. A.—*Recent Milling Practice in San Juan County, Colorado.* [Gold and silver ores with base metals are found. Brief descriptions of most of the important milling plants are given and one flotation plant is described].—Mg. World Jan. 15 1916; p 111; pp 6½*; 10c.

Rose, T. K.—*The Metallurgy of Gold.* [Separate chapters take up subjects related to gold as: Methods of extraction, concentration, alloys, chemistry, placer deposits, crushing, geology, assaying, etc. Reasons for, rather than a bare explanation, is the policy].—J. B. Lippincott Co.; pp 601*; book, $6.50.

Rosenblatt, G. B.—*Direct Drive for Flotation Machines.* [The motive power for each flotation cell is made by a separate direct connected electric motor].—Mg. World May 20 1916; p 957; pp 1½*; 10c.

Scott, W. A.—*Mill Equipment of the Engels Copper Mining Co., California.* [Mineral Separation Co.'s flotation cells are used. Crushing and classifying are described and the mill handles about 500 tons].—Mg. World June 24 1916; p 1165; pp 2*; 10c.

Scott, W. A.—*Milling and Smelting at Humboldt, Arizona.* [The plant of the Consolidated Arizona Smelting Co. is reviewed, including its crushing, concentration, flotation and smelting equipment and operations].—Mg. World June 17 1916; p 1133; pp 1¼*; 10c.

Shellshear, W.—*Selling Lead and Zinc Concentrates.* [Notes on selling lead-zinc ores and concentrates. Some information in regard to flotation and thermic methods as related to selling are given. All is based on Australian practice].—Mg. & Engg. Rev. May 5 1916; p 190; pp 3½*; 35c.

Sherwood, C. F.—*Pine Oil for Flotation.* [Results of tests on the same].—E. & M. J. Jan. 1 1916; p 21; pp 1¼*; 25c.

Singewald, J. T., Jr.; Miller, B. L.—*Mining in Oriente Province, Cuba.* [A general description of the country and geology is given. Copper and iron mines are operated. Open-pit methods and flotation treatment of ores are used].—E. & M. J. April 1 1916; p 587; pp 6*; 25c.

Smith, R. W.—*Flotation Replaces Cyanide.* [Describes a practical system for gold-silver ores in copper sulphide. Milling costs and many details of operation are given].—E. & M. J. Jan. 15 1916; p 142; pp 2½*; 25c.

Stander, H. J.—*Interfacial Tension in Flotation.* [On the action of oils and acids based on electrostatic phenomena and interfacial tension].—E. & M. J. Mar 25 1916; p 576; pp 3; 25c.

Thomson, F. A.—*Principles Involved in Flotation Concentration.* [A concise but clear description of the theory and operation of flotation].—Mg. World Feb. 19 1916; p 392; pp ¾; 10c.

Thronberry, M. H.—*Soap as a Frothing Agent in Flotation.* [Description and tables showing the results of tests made with this agent are given].—M. & S. P. May 13 1916; p 715; pp 2; 20c.

Tupper, C. A.—*Flotation—Its Progress and Its Effects Upon Mill Design.* [A review of the development in this method during 1915, most of which is devoted to copper ores and some to lead].—Mg. World Jan. 1 1916; p 1; pp 14*; 10c.

Van Arsdale, G. D.—*How Flotation Works.* [In a purely theoretical way it explains how several physical characters and shapes affect the flotation of a particle. It also takes up the questions regarding the liquid, oils, bubbles, etc.].—E. & M. J. May 13 1916; p 851; pp 5*; 25c.

Whitaker, W. A.; Belchic, George.—*A Form for the Classification of Flotation Data.* [Description and illustrations of the card forms to be used are given].—Met. & Chem. Engg. Jan. 1 1916; p 33; pp ¾; 30c.

Wright, C. A.—*Flotation Tests on Joplin Lead and Zinc Ores.* [Abst. from a preliminary report by the U. S. Bureau of Mines. Results of the tests are not given in detail, but rather have been used to show the practicability of using this method on the ores].—Mg. World April 15 1916; p 737; pp 2; 10c.

——— *Breaking Down Froth in Flotation Work.* [Describes a recent attachment for breaking up the froth as it comes from the machine].—Mg. World May 20 1916; p 951; pp 1¼*; 10c.

——— *Canadian Institute of Mining Engineers* [A report of papers and discussion at the recent Ottawa meeting on the flotation process].—Met. and Chem. Engg. Mar. 15 1916; p 323; pp 9½*; 30c.

——— *Carrie Jane Billings Everson.* [Accounts of the life of Mrs. Everson in regard to the discovery of flotation and reveals many interesting facts with a reprint of the patent issued her].—E. & M. J. Jan. 15 1916; p 129; pp 4*; 25c.

——— *Flotation Concentration of Ores.* [Detailed information collected from many sources].—Mex. Mg. Jnl. Feb. 1916; p 45; pp 2½; 35c.

——— *Flotation and Cyanidation.* [A

symposium on the cyanidation of flotation products and the influence of flotation on the relative importance of cyanidation as a metallurgical process].—Met. & Chem. Engg. May 15 1916; p 569; pp 4; 30c.

——— *Flotation in Cuba.* [Gives instances of its use with some details and treats on the experiments of the Cobre mine in particular].—M. & S. P. Jan. 22 19'6; p 195; pp 3¾*; 20c.

——— *Flotation and Wet Concentration.* [From the Mining & Engineering Review, with information on oxide and carbonate ores in concentration].—Mex. Mg. Jnl. Jan. 1916; p 6; pp 2; 35c.

——— *Flotation at Broken Hill, N. S. W., Australia.* [Abst. from the Mining & Engineering Review].—E. & M. J. Jan. 29 1916; p 231; pp 1; 25c.

——— *Importance of Flotation in Metallurgy Too Vast to Estimate.* [A general review and talk on the flotation process].—Mg. Cong. Jnl. May 1916; p 242; pp 2¾; 30c.

——— *Reverberatory Smelting at Consolidated Arizona Smelting Co., Humboldt, Arizona.* [Copper sulphides are treated and the flotation concentrates roasted].—Met. & Chem. Engg. Jan. 1 1916; p 33 pp 1½; 30c.

——— *Smelting Flotation Concentrates.* [Abst. from Teniente Topics on operations of this nature by the Braden Copper Co., Chile].—M. & S. P. Feb. 12 1916; p 243; pp 1; 20c.

——— *United States Standard Tables for Petroleum Oils.* [Tabulated data giving physical properties of various oils under varying conditions].—U. S. Bur. Stand. Circular 57; pp 64.

——— *University of Utah Research Department's Results in Flotation Work.* —Mg. World April 15 1916; p 742; pp ¾; 10c.

CONCENTRATING: SORTING, SIZING, WASHING

Allen, A. W.—*Clay: Its Relation to Ore Dressing and Cyanide Operations.* [Colloidal properties, etc., derived from the clay content are taken up and their ill effects brought out].—Bull. of Inst. Mg. & Met. London; Dec. 9 1915; p 19*; 50c. Mg. World May 27 1916; p 1001; pp 2; 10c. M. & S. P. Feb. 26 1916; p 310; pp 2; 20c.

Anderson, R. J.—*The Metallurgical Disposal of Flotation Concentrates.* [Deals with the skimming and smelting of the concentrates].—Met. & Chem. Engg. April 1 1916; p 381; pp 2¼; 30c.

Austin, L. S.—*The Washoe Reduction Works, Anaconda, Montana.* [The concentrator is described and in connection with the description of the smelter, coal-dust burners used are described].—M. & S. P. Feb. 5 1916; p 195; pp 8¾*; Feb. 26 1916; p 304; pp 6*; 40c.

Avery, P. W.—*Galena in Gold and Silver Ores.* [Treats on the concentration of these ores found in the El Oro mines, Mexico].—E. & M. J. May 6 1916; p 819; pp 1¼; 25c.

Barr, J. A.—*The Use of Low Grade Phosphates.* [Speaks of methods of concentration and the uses of the mineral for fertilizing].—A. I. M. E. Feb. 1916; p 243; pp 3; 35c. Mg. World Feb. 26 1916; p 435; pp 1¼; 10c.

Bone, W. A.—*Fuel Economy.* [Treats on the world's resources and points out where conservation might be practiced].—Jnl. Soc. Chem. Ind. April 15 1916; p 389; pp 8; 60c.

Brodie, W. M.—*Metallurgy of Native Silver Ores in Southwestern Chihuahua, Mexico.* [A paper read before the Pan-American Scientific Cong. History, smelting, concentrating, cyaniding, amalgamation, occurrence and crushing are taken up].—E. & M. J. Feb. 12 1916; p 297; pp 5*; 25c.

Browne, D. H.—*Notes on the Metallurgy of Copper.* [Current literature from several sources on operations at the larger copper mines of the world].—Canadian Mg. Inst. Bull. May 1916; p 458; pp 6½; 35c.

Clennell, J. E.—*Concentration Formulas.* [A discussion and concentration formula].—E. & M. J. Jan. 1 1916; p 17; pp ¾; 25c.

Clevenger, G. H.—*The Hydrometallurgical Treatment of Complex Gold and Silver Ors.* [A paper read before the Pan-American Scientific Cong. relative to the history and present practices in the amalgamation and cyanide processes].—Met. & Chem. Engg. Feb. 15 1916; p 203; pp 7¼; 30c.

Cutler, H. C.—*Stamps and Competitive Machinery.* [On the evolution from the stamp to the ball and other types of crushing mills].—M. & S. P. Feb. 5 1916; p 204; pp 3; 20c.

Del Mar, Algernon.—*The Year's Changes in Crushing and Grinding.* [A description of changes and present-day crushing methods preliminary to cyanidation].—Mg. World Jan. 1 1916; p 50; pp 1; 10c.

Douglass, R. E.; Colley, B. T.—*Metallurgical Operations of the Braden Copper Co., Chile.* [A paper read before the

Pan-American Scientific Cong. Descriptions of various operations in concentration, flotation and smelting are given].—E. & M. J. Feb. 12 1916; p 315; pp 6½*; 25c.

Down, T. A.—*Tin and Tungsten in Portugal.* [The results of some sampling and drilling are brought out, and with them the geology is described, as also is their methods of concentration].—Mg. Mag. Jan. 1916; p 19; pp 6*; 50c.

Durham, E. B.—*Gold-Milling in Amador, California.* [A number of mills in the district have their crushing and concentrating operations briefly described].—M. & S. P. Feb. 26 1916; p 301; pp 3*; 20c.

Eddy, L. H.—*Jigs on a California Dredge.* [Hardinge mills and Neill jigs are used here, with the latter placed in the sluices, and they have shown an advance in this kind of mining as well as a saving].—E. & M. J. Jan. 29 1916; p 208; pp 1¾*; 25c.

Fleck, Herman. — *Concentration of Tungsten Ore.* [A paper read before the Colorado Scientific Soc.].—M. & S. P. Jan. 29 1916; p 166; pp ¾; 20c.

Free, E. E.—*Properties of Slime Cakes.* [Theories of plasticities are discussed. It is said to be due to gelatinous colloid films. There is no evidence of these in slimes. Factors tending to affect the colloidal properties of slimes are discussed].—E. & M. J. June 17 1916; p 1068; pp 2¼; 25c,

Free, E. E.—*Sedimentation and Flocculation.* [A detailed review of properties and peculiarities of fine particles in concentration which are colloidal or floating properties mostly].—E. & M. J. Mar. 4 1916; p 429; pp 3¾*; 25c.

Gudgeon, C. W.—*The Scheelite-Gold Mines of Otago, New Zealand.* [The geology is taken up and several properties described. Mill flow-sheets and milling and mining costs are given, besides a brief on a wet method for assaying pyritic scheelite for tungsten].—Proc. Aus. Inst. M. E.; N. S. No. 21 1916; p 37; pp 14*; 65c.

Hamilton, Fletcher.—*Concentration of Quicksilver Ores in California.* [Tests are being made as to the applicability of concentrating before the thermic treatment. High extraction by water concentration and flotation is claimed].—Mg. World May 27 1916; p 997; pp 1; 10c.

Hatschek, E.—*An Introduction to the Physics and Chemistry of Colloids.* [In this second edition the chapter on experimental work is more complete].—Churchill, London; book; pp 105*; $1.

Howard, L. O.—*Ozokerite in Utah.* [A brief review of the deposits is made a[illegible] a description of the methods of refini[illegible] the raw product are given. Some of t[illegible] deposits and operating properties are d[illegible] scribed].—M. & S. P. June 17 1916; 907; pp 4½*; 20c.

Keiser, W. G.—*Dry Placer Mining on a Large Scale.* [A general account o[illegible] placer operations in Yuma county, whe[illegible] dry concentration is employed. The pla[illegible] used are known as Quenner-Stebb[illegible] plants].—Mg. World May 27 1916; p 9[illegible] pp 1½; 10c.

Laist, F.; Wiggin, A. E.—*Water Concentration Before Flotation at Anaconda Montana.* [A paper read before the Arizona chapter of the A. I. M. E.].—M. & S. P. Mar. 25 1916; p 446; pp 2*; 20c.

Lang, Herbert.—*Quicksilver Reduction.* [The nature of the ores, methods of assay, concentration of ores, metallurgy and condensation of the metal and diseases caused from mercury are taken up].—M. & S. P. May 13 1916; p 707; pp 8*; 20c.

Liddell, D. M.—*Metallurgists' and Chemists' Handbook.* [Contains data, prices, production, methods of assay, analysis, cyanidation, ore-dressing, and information on fuels, refractories, design and construction, etc.].—McGraw-Hill; book; pp 603*; $4.

Liwehr, A. E.—*Der Kesson-Ricesche Klassierherd.* [Describes a concentrating table in use in Germany].—Montan. Rund. Dec. 16 1915; p 805; pp 4½*; 35c.

Lohse, U. — *Sandaufbereitungsvorrichtungen der Maschinenfabrik Gebr. Pfeiffer in Kaiserslautern.* [Description of a machine for washing and grading sands].—Giesserei-Ztg. Dec. 1 1915; p 353; pp 3½*; 35c.

Magee, J. F.—*The Milling of Tungsten Ores.* [Small uncovered installations are usually employed in this class of operations in Colorado].—E. & M. J. April 22 1916; p 717; pp 1¾*; 25c.

Mathewson, E. P.—*Recent Improvements in Concentration at the Washoe Reduction Works, Anaconda, Montana.* [A general detailed description of the crushing and concentration operations in connection with flotation. A flow sheet is given].—Canadian Mg. Inst. Bull. June 1916; p 560; pp 9*; 35c.

Martin, W. M.—*Glass Top Concentrating Tables.* [In the form of discussion information is given on comparative tests of tables with wooden and glass tops].—Mg. Mag. May 1916; p 271; pp 2; 50c.

Maxwell-Lefroy, E.—*Wolframite Mining in the Tavoy District, Lower Burma.* [Brings out the important points in a de-

tailed manner as regards history, geology, law, concentration of ores and mining in general].—Bull. of Inst. Mg. & Met. London; Dec. 9 1915; pp 18; 50c.

McDonald, P. B.—*Scheelite Mining and Grading.* [Gives details of the grades, as sold to the ore buyer for the smelter and reviews mining of the mineral in southern California].—M. & S. P. Jan. 8 1916; p 40; pp 1½*; 20c.

Miner, F. L.—*The New Milling Plant for the Nevada Tungsten Property.* [A brief description of the deposit and the mill].—Mg. World June 10 1916; p 1078; pp 1*; 10c.

O'Flynn, W. R.—*Concentration Formulas.*—E. & M. J. April 1 1916; p 613; pp 1; 25c.

Palmer, L. A.—*The Central Mill of the North Star Mines Co., California.* [Gives considerable detail on the crushing, concentration, amalgamation, slime treatment and milling costs].—Met. & Chem. Engg. Jan. 1 1916; p 35; pp 3¾*; 30c.

Parmelee, H. C.—*Recent Practice in Concentrating Colorado Tungsten Ores.* [Treats on both crushing and concentrating of the ores].—Met. & Chem. Engg. Mar. 15 1916; p 301; pp 3*; 30c.

Peckham, A. B.—*Cyanidation at the Comacaran Mine, Salvador.* [Gives detailed information on the crushing, cyanidation, slime treatment, precipitation, clarification and sand treatment of the gold ores].—M. & S. P. April 29 1916; p 639; pp 2¾*; 20c.

Ralston, O. C.—*The Control of Ore Slimes.* [The electricity originating in the slimes is taken up and details given regarding its effects and nature. The same is given regarding other substances either originally present in the slimes or being originated therein].—E. & M. J. June 3 1916; p 990; pp 4¼; 25c.

Randall, C. A.—*Metallurgy at Tough-Oakes Gold Mines, Ltd., Ontario.* [The description is very complete and gives a large amount of specific data, assays, results of tests, etc.].—Canadian Mg. Jnl. May 1 1916; p 225; pp 5*; 35c.

Ricketts, L. D.—*Improved Mining and Metallurgy an Aid to Conservation.* [A paper read before the Pan-American Scientific Cong. reviewing the progress in mining methods, metallurgy and concentration of copper ores principally].—E. & M. J. Feb. 12 1916; p 291; pp 1½; 25c.

Rose, T. K.—*The Metallurgy of Gold.* [Separate chapters take up subjects related to gold as: Methods of extraction, concentration, alloys, chemistry, placer deposits, crushing, geology, assaying, etc. Reasons for, rather than a bare explanation, is the policy].—J. B. Lippincott Co.; pp 601*; book; $6.50.

Scott, W. A.—*Mill Equipment of the Engels Copper Mining Co., California.* [Mineral Separation Co.'s flotation cells are used. Crushing and classifying are described and the mill handles about 500 tons].—Mg. World June 24 1916; p 1165; pp 2*; 10c.

Scott, W. A.—*Milling and Smelting at Humboldt, Arizona.* [The plant of the Consolidated Arizona Smelting Co. is reviewed, including its crushing, concentration, flotation and smelting equipment and operations].—Mg. World June 17 1916; p 1133; pp 1¼*; 10c.

Shellshear, W.—*Selling Lead and Zinc Concentrates.* [Notes on selling lead-zinc ores and concentrates. Some information in regard to flotation and thermic methods as related to selling are given. All is based on Australian practice].—Mg. & Engg. Rev. May 5 1916; p 19*; pp 3½*; 35c.

Siebenthal, C. E.—*The Conservation of Lead and Zinc.* [A paper read before the Pan-American Scientific Soc. It is confined to conservation in smelting and concentrating the ores].—Mg. World Feb. 19 1916; p 393; pp 2; 10c.

Singewald, J. T., Jr.; Miller, B. L.—*Mining in Oriente Province, Cuba.* [A general description of the country and geology is given. Copper and iron mines are operated. Open-pit methods and flotation treatment of ores are used].—E. & M. J. April 1 1916; p 587; pp 6*; 25c.

Sohnlein, M. G. F.—*A Combined Hydraulic and Mechanical Classifier.* [A type especially designed for use in a Bolivia tin concentrating plant].—Bull. A. I. M. E. April 1916; p 715; pp 6*; 35c. Mg. World June 3 1916; p 1049; pp 1*; 10c.

Taggart, A. F.; Young, R. W.—*Grinding Brass Ashes in the Conical Ball Mill.* [In working this alloy ashes consist of slag, sweepings, overflow from the molds, etc. Tests are described on grinding the ashes previous to concentrating on tables].—A. I. M. E. Bull. Feb. 1916; p 435; pp 8*; 35c. I. Tr. Rev. Feb. 24 1916; p 440; pp 3*; 25c.

Trewartha-James, W. H.—*Glass Surfaces in Concentration.* [Treats on the uses of various kinds of glass used in the laboratory and remarks about the extreme sensitiveness of glass in concentration tests].—Mg. Mag. Feb. 1916; p 88; pp 2*; 35c.

Wagner, P. A.—*Economic Geology and*

Mineral Industry of Southwest Africa. [Prospecting, sampling, dredging, washing and dressing, water supply and transportation in the diamond fields of this area are reviewed].—S. Afr. Mg. Jnl. May 6 1916; p 133; pp 1; 35c.

Watts, A. S.—*The Feldspars of the New England and North Appalachian States.* [Contains description of the geology and separate descriptions of the quarries. Tests for the feldspar are given, as are methods of quarrying, pumping, crushing, concentration, etc].—U. S. Bur. of Mines Bull. 92; pp 181*; 35c.

Wherry, H. P.—*Concentration of Zinc Ore in Wisconsin.* [A complete description and discussion of the new and old system used at the Thompson mine of the Field Mg. & M. Co. Flow sheets are given with the results of tests on which were based certain selections made].—M. & S. P. April 22 1916; p 587; pp 5½*; 20c.

Wiard, E. S.—*The Grading Industries.* [Treats on the use of revolving screens, trommels, volumetric grading, etc.].—Met. & Chem. Engg. May 1 1916; p 529; pp 4¼*; 30c.

Wittich, L. L.—*New Granby Concentrator.* [A view of the plant with description and flow-sheet are given].—E. & M. J. Mar. 25 1916; p 557; pp 1¼*; 25c.

——— *Flotation and Wet Concentration.* [From the Mining & Engineering Review, with information on oxide and carbonate ores in concentration].—Mex. Mg. Jnl. Jan. 1916; p 6; pp 2; 35c.

——— *Mica Mining.* [A general review of the mica mining and marketing industry. Production, sorting and concentration of the raw material is briefly treated on and a chart is given showing the final subdivision of 1000 lbs. of the raw material and what total amount will be obtained for different grades of the same].—M. & S. P. June 10 1916; p 866; pp 1; 20c.

——— *Mining Manganese Ore in Virginia.* [Open pit operations are followed and the methods of crushing and washing the clay-like ore obtained are described].—Iron Age Mar. 30 1916; p 776; pp 2*; 30c.

——— *Nelson's Ore Separator.* [A new machine for classification and concentration. Its construction and theory of operation are described].—Mg. World June 3 1916; p 1042; pp ¾*; 10c.

——— *The Rowe Mine Ore Washing Plant, Minnesota.* [A detailed description, including the handling of the ore with belt conveyors].—Mg. World Mar. 11 1916; p 517; pp 2¼*; 10c.

AMALGAMATION

Brodie, W. M.—*Metallurgy of Native Silver Ores of Southwestern Chihuahua, Mexico.* [A paper read before the Pan-American Scientific Cong. History, smelting, concentrating, cyaniding, amalgamation, occurrence and crushing are taken up].—E. & M. J. Feb. 12 1916; p 297; pp 5*; 25c.

Clevenger, G. H.—*The Hydrometallurgical Treatment of Complex Gold and Silver Ores.* [A paper read before the Pan-American Scientific Cong. relative to the history and present practices in the amalgamation and cyanide processes].—Met. & Chem. Engg. Feb. 15 1916; p 203; pp 7¼; 30c.

Eye, C. M.—*Gold Mining in the Philippines.* [Water power and combustion engines are used considerably. The descriptions are general but separate in describing the operations of companies. Both amalgamation and cyanidation are employed].—M. & S. P. June 17 1916; p 900; pp 2½*; 20c.

Jane, W. H.; Davey, F.—*Clean-Up Room Practice at the Simmer Deep, South Africa.* [Treats on the method employed in cleaning the black-sand and amalgam from the plates].—Jnl. Chem. Met. & Mg. Soc. of S. Afr. Oct. 1915; p 67; pp 3½; 85c. Mex. Mg. Jnl. April 1916; p 124; pp 2; 35c.

Lee, C. F.—*Some Hydraulic Mining Problems.* [Abst. of a paper read before the A. I. M. E. Costs, difficulties and details of operation in the Atlin district, B. C., are given. Detailed data and information regarding sluicing are included].—Mg. World June 24 1916; p 1181; pp 1*; 10c.

Palmer, L. A.—*A New Dry Amalgamator.* [The machine consists of five amalgamated copper rolls with an amalgamating trough below each. It is being tried on slimes].—Met. & Chem. Engg. June 15 1916; p 715; pp 1*; 30c.

Palmer, L. A.—*The Central Mill of the North Star Mines Co., California.* [Gives considerable detail on the crushing, concentration, amalgamation, slime treatment and milling costs].—Met. & Chem. Engg. Jan. 1 1916; p 35; pp 3¾*; 30c.

Rose, T. K.—*The Metallurgy of Gold.* [Separate chapters take up subjects related to gold as: Methods of extraction, concentration, alloys, chemistry, placer deposits, crushing, geology, assaying, etc. Reasons for, rather than a bare explanation, is the policy].—J. B. Lippincott Co.; pp 601*; book; $6.50.

CYANIDING

Allen, A. W.—*Clay: Its Relation to Ore Dressing and Cyanide Operations.* [Colloidal properties, etc., derived from the clay content are taken up and their ill effects brought out].—Bull. of Inst. Mg. & Met. London; Dec. 9 1915; pp 19*; 50c. Mg. World May 27 1916; p 1001; pp 2; 10c. M. & S. P. Feb. 26 1916; p 310; pp 2; 20c.

Avery, P. W.—*Cyanidation of Flotation Concentrates.* [Discussion giving detailed figures on the item considered].—M. & S. P. May 6 1916; p 661; pp 1¼; 20c.

Avery, P. W.—*Precipitating Action of Carbonaceous Shale in Cyanide Solution.* [The results of many tests made along this line are given with the results plotted in curve form].—M. & S. P. April 8 1916; p 514; pp 3*; 20c.

Bridges, R. W.—*The Metallurgy of Cobalt Silver Ores.* [Tables showing detailed results of operations and the leaching with cyanide, which operations make up the complete method].—Canadian Mg. Jnl. Mar. 15 1916; p 134; pp 2*; 35c.

Brodie, W. M.—*Metallurgy of Native Silver Ores of Southwestern Chihuahua, Mexico.* [A paper read before the Pan-American Scientific Cong. History, smelting, concentrating, cyaniding, amalgamation, occurrence and crushing are taken up].—E. & M. J. Feb. 12 1916; p 297; pp 5*; 25c.

Chauvenet, Regis. — *Blast Furnace Smelting of Cyanide Precipitates.* [Gives details for charges and methods of computing quantities of the same for the best results].—Met. & Chem. Engg. Jan. 15 1916; p 96; pp 3½; 30c.

Clennell, J. E.—*Estimating Aluminum in Aluminum Dust.* [Comparative methods are herein described for estimating the aluminum in aluminum-dust for cyanidation work].—E. & M. J. May 6 1916; p 813; pp 2¼; 25c.

Clevenger, G. H.—*Aluminum Dust.* [Describes the uses and manufacture of this product, which is of importance in the cyanide process, and is coming into use for explosives].—M. & S. P. Jan. 22 1916; p 118; pp 1; 20c.

Clevenger, G. H.—*Factors in the Operation of the Cyinade Process.* [Abst. of a paper read before the second Pan-American Congress].—Mg. World April 1 1916; p 657; pp 1¾; 10c.

Clevenger, G. H.—*The Hydrometallurgical Treatment of Complex Gold and Silver Ores.* [A paper read before the Pan-American Scientific Cong. relative to the history and present practices in the amalgamation and cyanide processes].—Met. & Chem. Engg. Feb. 15 1916; p 203; pp 7¼; 30c.

Coe, H. S.; Clevenger, G. H.—*Laboratory Method for Determining the Capacities of Slime-Settling Tanks.* [The work was started at Stanford Univ. and later continued at a Bureau of Mines laboratory and is published with permission of the U. S. Bureau of Mines].—Bull. A. I. M. E. Mar. 1916; p 597; pp 29*; 35c.

Coe, H. S.; Clevenger, G. H.—*Slime-Settling.* [A paper read before the A. I. M. E.].—M. & S. P. Mar. 18 1916; p 414; pp 1; 20c.

Coghill, W. H.—*Research Problems.* [Speaks of his experience in encountering metallurgical problems and describes the way in which he solved them].—M. & S. P. Jan. 29 1916; p 159; pp 2; 20c.

Crook, W. J.; Booth, L. E.; Thiel, A.—*Electrolysis of Alkaline Solutions of Potassium Sulphocyanate.* [A very detailed treatise with figures and description of the chemistry applied thereto].—Met. & Chem. Engg. May 15 1916; p 587; pp 4¼; 30c.

Crawford, P. H.—*Working Data on Electrolytic Precipitation.* [Tabulated and other detailed figures on the results of operations].—M. & S. P. April 29 1916; p 634; pp 3½*; 20c.

Del Mar, Algernon.—*The Year's Changes in Crushing and Grinding.* [A description of changes and present-day crushing methods preliminary to cyanidation].—Mg. World Jan. 1 1916; p 50; pp 1; 10c.

Drucker, A. E.—*Machinery for Cyaniding Flotation Concentrate.* [A general discussion with a typical flow sheet for such a plant].—M. & S. P. April 8 1916; p 517; pp 2¼*; 20c.

Eye, C. M.—*Gold Mining in the Philippines.* [Water power and combustion engines are used considerably. The descriptions are general, but separate in describing the operations of companies. Both amalgamation and cyanidation are employed].—M. & S. P. June 17 1916; p 900; pp 2½*; 20c.

Feldtmann, W. R.—*The Mines of Ashanti Goldfields Corporation, West Africa.* [The history, methods of mining, geology and origination of the company are given. These arsenical ores must first be roasted and are then cyanided].—Mg. Mag. May 1916; p 257; pp 12*; 50c.

Fischer, H.—*Effect of Black Slate on Cyanidation.* [The results of a number of tests in tabulated form are given and accompanied with description of the

tests].—M. & S. P. May 20 1916; p 743; pp 2¾; 20c.

Free, E. E.—*Colloids and Colloidal Slimes.* [A detailed description of what colloids are and the theory connected with them, which is of importance in all milling, cyanide and flotation operations].—E. & M. J. Feb. 5 1916; p 249; pp 5; 25c.

Free, E. E.—*Properties of Slime Cakes.* [Theories of plasticities are discussed. It is said to be due to gelatinous colloid films. There is no evidence of these in slimes. Factors tending to affect the colloidal properties of slimes are discussed].—E. & M. J. June 17 1916; p 1068; pp 2¼; June 24; p 1105; pp 3½; 50c.

Higgins, W. C.—*Mine and Mill of Bannack Gold Mining Co., Utah.* [A description of the deposit and mine workings. The bill has continuous, counter-current decantation].—S. L. Mg. Rev. May 15 1916; p 17; pp 4½*; 25c.

Jennings, H.—*Evolution of the Cyanide Process on the Rand, South Africa.* [A paper read before the A. I. M. E.]—S. Afr. Engg. Jan. 1916; p 1; pp 1¼; 35c.

Layng, H. R.—*Cyanidation of Flotation Concentrates.* [Contains discussion on a recent paper on the subject in the form of correspondence].—M. & S. P. June 3 1916; p 813; pp ¾; 20c.

Levy, D. M.; Jones, H.—*The Morro Velho Method of Assay of Gold-Bearing Cyanide Solutions.* [Abst. from the Trans. of the Inst. of Mg. & Met.].—Mex. Mg. Jnl. Mar. 1916; p 83; pp ¾; 35c.

Liddell, D. M.—*The Metallurgist and Chemists' Handbook.* [Contains the usual handbook data on chemistry and methods for both the cyanide and other hydrometallurgical processes besides thermic metallurgy].—McGraw Hill Book Co.; book; pp 603*; $4.

McArthur, J. S.—*The Discovery of Cyanidation.* [On the experimental work and experience of the author and others in an attempt to find a hydro-metallurgical method for the extraction of gold. The account dates from about 1885].—M. & S. P. June 10 1916; p 851; pp 7*; 20c.

Megraw, H. A.—*Metallurgy of Gold and Silver.* [Treats on the progress in Mexico; the Rand, South Africa; Arizona and Colorado, besides a note on the Tough-Oakes mill, Ontario].—E. & M. J. Jan. 8 1916; p 94; pp 2½; 25c.

Palmer, L. A.—*The Central Mill of the North Star Mines Co., California.* [Gives considerable detail on the crushing, concentration, amalgamation, slime treatment and milling costs].—Met. & Chem. Engg Jan. 1 1916; p 35; pp 3¾*; 30c.

Pearce, J. A.—*Refining Cupriferous Precipitate.* [Copper is taken into solution by the cyanide. Hydrometallurgical methods of getting and separating it from this solution are dealt with].—M. & S. P. Feb. 19 1916; p 270; pp 2½; 20c.

Peckham, A. B.—*Cyanidation at the Comacaran Mine, Salvador.* [Gives detailed information on the crushing, cyanidation, slime treatment, precipitation, clarification and sand treatment of the gold ores].—M. & S. P. April 29 1916; p 639; pp 2¾*; 20c.

Regg, Gilbert.—*Zinc-Dust Precipitation Tests.* [A discussion on the solubility of cadmium, zinc and lead with each other while in the molten state and thus found in zinc dust used for precipitation from cyanide solutions].—Mg. World Jan. 15 1916; p 122; p 1; 10c.

Ralston, O. C.—*The Control of Ore Slimes.* [Published by permission of the U. S. G. S. Treats on the colloidal properties of slimes and other of their peculiarities which often affect their successful treatment].—E. & M. J. April 29 1916; p 763; pp 6¼*; 25c.

Randall, C. A.—*Metallurgy at Tough-Oakes Gold Mines, Ltd., Ontario.* [The description is very complete and gives a large amount of specific data, assays, results of tests, etc.].—Canadian Mg. Jnl. May 1 1916; p 225; pp 5*; 35c.

Rickard, T. A.—*Philip Argall and Metallurgical Progress.* [A review of Mr. Argall's life in the mining field, including experience with gold, tin, copper, etc.]—M. & S. P. Jan. 22 1916; p 119; pp 12*; 20c.

Sill and Sill. — *An Electro-Cyanide Process.* [A method of electrical precipitation of gold and silver from cyanide solution].—Mg. & Oil Bull. Mar. 1916; p 89; pp 2½*; 25c.

Smith, A. M.—*Alkalinity of Cyanide Solutions.* [In a brief way gives details regarding experience in this line and particularly at a plant treating a tough amorphous quartz with finely divided free gold].—M. & S. P. June 3 1916; p 828; pp 1; 20c.

Todd, R. B.—*The Nevada Packard Mill.* [The crushing and cyanide operations are described as followed for treating the ore, which is principally silver].—E. & M. J. Feb. 5 1916; p 247; pp 1¾*; 25c.

Weber, M. C.—*Copper Cyanide Plating Solution.* [A paper read before the Lewis Institute].—Mex. Mg. Jnl. Feb. 1916; p 44; pp 1¾; 35c.

Weinig, A. J.—*The Liberty Bell Meth-*

ods of Precipitate Refining, Colorado. [Both acid and thermic methods are used].—Bull. A. I. M. E. Mar. 1916; p 651; pp 12; 35c.

Willard, C. G.—*The Golden Reward Roaster, South Dakota.* [A brief description with details on the crushing and roasting of the ores preliminary to cyanidation. Sulphur is reduced from an average of 6% to less than 1%].—Pahasapa June 1916; p 40; 6*; 30c.

Wraight, E. A.—*Influence of Heat in Cyaniding.* [Experimental work on the effects heat has in the dissolution of gold in cyanide solutions].—Bull. of Inst. Mg. & Met. London; Dec. 9 1915; p 1; pp 18*; 50c.

——— *Cyanide Consumption on the Rand, South Africa.* [Figures for 1914].—M. & S. P. Jan. 8 1916; p 57; pp 2; 20c.

——— *Cyaniding by Continuous Decantation at Two Nevada Silver Mills.* [Pittsburgh-Dolores and Rochester are the mills here described. Costs and methods of operation are given].—Met. & Chem. Engg. April 15 1916; p 435; pp 3¼*; 30c.

——— *Flotation and Cyanidation.* [A symposium on the cyanidation of flotation products and the influence of flotation on the relative importance of cyanidation as a metallurgical process].—Met. & Chem. Engg. May 15 1916; p 569; pp 4; 30c.

——— *Mining in the Philippine Islands.* [Gold mining and dredging are carried on. The new Benguet mill, which will use the sliming cyanide process and be operated by electricity, is described].—Mex. Mg. Jnl. Jan. 1916; p 13; pp 1½; 35c.

——— *New York and Honduras Rosario Mining Co., Central America.* [Abst. from the company's report describing the mill and power plant on the property].—Mex. Mg. Jnl. Feb. 1916; p 53; pp 4¼*; 35c.

——— *Porcupine Crown Mines, Ltd., Ontario.* [Abst. from a company report, costs, reserves, drilling operation and other information is given].—Canadian Mg. Jnl. May 1 1916; p 210; pp 1¾*; 35c.

——— *Porcupine Gold Ores Treatment.* [A general review of practice followed in the district].—Canadian Mg. Jnl. May 1 1916; p 223; pp 2*; 35c.

——— *The Chontalpan Mill, Guerrero, Mexico.* [The cyanide process is used on ores of clean quartz carrying silver sulphide, lead and iron].—Mex. Mg. Jnl. Jan. 1916; p 5; pp 1½*; 35c.

——— *The Dorr Cyanide Machinery in Metallurgy.* [A general account of the history which had to do with several classes of machinery now made by this company].—Mg. World April 8 1916; p 703; pp 2*; 10c.

BRIQUETTING

Hoskin, A. J.—*Distillation of Colorado Lignite.* [Describes a plant at Denver, Colo., where briquettes, gas, oils and other by-products are made from lignite found in the state].—Coal Age April 15 1916; p 665; pp 2¾*; 20c.

Lesher, C. E.—*Fuel Briquetting in* 1915. [Little difference was shown from 1914. The industry is still in its infancy].—Min. Res. of U. S. II:1; pp 6.

Malcolmson, C. T.—*The Coal-Briquetting Industry.* [Advance was made in the briquetting of fine anthracite and plant improvements were principally in the west and northwest].—Coal Age Jan. 8 1916; p 86; pp 1¼; 20c.

Wüst, F.—*Ueber den Einfluss Eines Spaenebrikettzusatzes auf den Verlauf des Kupolofenschmelzprozenen Eisens.* [The making of briquettes for use in cupola furnaces].—Wilhelm Knapp, Hall, a.S., Germany; book; pp 122*; 25c.

——— *Power Briquetting Press.* [A toggle type installed at the Wickwire steel plant in Youngstown, Ohio].—Iron Age Feb. 10 1916; p 372; pp 1½*; 30c.

——— *Production of Coke and Briquettes in the United Kingdom in* 1914.—I. & C. Tr. Rev. Jan. 7 1916; p 1; pp ⅔; 35c.

——— *Uebersicht über den Oberschlesischen Steinkohlen, Brikett und Koks-Versand nach den einzelnen Stationen des in und Auslandes.* [Gives the production, imports and exports of coal, coke and briquettes in upper Silesia and other states of Germany. It is arranged in table form].—Zts. Oberschles. Berg & Hütten-Vereins Sept. 1914; p 344; pp 16; 50c.

CHLORINATION

Bridges, R. W.—*The Metallurgy of Cobalt Silver Ores.* [Tables showing detailed results of operations and the leaching with cyanide, which operations make up the complete method].—Canadian Mg. Jnl. Mar. 15 1916; p 134; pp 2*; 35c.

Eustis, F. A.—*Chloridizing and Leaching Plant of Virginia Smelting Co., Virginia.* [Pyrite cinders high in copper are chloridized and leached and those lower in copper are given an acid leach only].—

E. & M. J., May 6 1916; p 803; pp 2½*; 25c.

Ionides, S. A.—*The Dry Chlorination of Complex Ores.* [Speaks in particular of the system which was started but not finished by the Bunker Hill & Sullivan Mg. & Concent. Co., Ida. Lead and zinc sulphides were the principal ores].—M. & S. P. May 27 1916; p 781; pp 7*; 20c.

MILLING COSTS

Burman, B. F.—*Coal, Coke and Limestone Efficiency in Blast Furnace Operation.* [Detailed costs, results and figuring for operations are given].—Met. & Chem. Eng. Mar. 1 1916; p 256; pp 2¾; 25c.

Gudgeon, C. W.—*The Scheelite-Gold Mines of Otago, New Zealand.* [The geology is taken up and several properties described. Mill flow-sheets and milling and mining costs are given, besides a brief on a wet method for assaying pyritic scheelite for tungsten].—Proc. Aus. Inst. M. E.; N. S. No. 21 1916; p 37; pp 14*; 65c.

Hamilton, Fletcher.—*Concentration of Quicksilver Ores in California.* [Tests are being made as to the applicability of concentrating before the thermic treatment. High extraction by water concentration and flotation is claimed].—Mg. World May 27 1916; p 997; pp 1; 10c.

Higgins, W. C.—*Development and Equipment of the Walker Copper Mine, California.* [Mine development and milling operations are described. A table itemizing the production cost is also given].—S. L. Mg. Rev. Mar. 30 1916; p 11; pp 3*; 25c.

Liebig, M.—*The Roitsheim-Remy Continuous Zinc Distillation Process.* [Translated from German in Metal & Erz. A complete and detailed description is given of this process, equipment required and methods and costs of operation].—Met. & Chem. Engg. June 1 1916; p 625; pp 4½*; 30c.

Lyon, D. A.; Keeney, R. M.—*Feasibility of Western Electrometallurgy.* [Deals with iron, aluminum, zinc, copper, costs and other items of importance].—Jnl. of Elect. Power & Gas Mar. 25 1916; p 237; pp 3¾*; April 8; p 282; pp 3; April 15; p 296; pp 2½; April 22 1916; p 316; pp 2¼; April 29 1916; p 331; pp 3¾*; $1.75.

Magee, J. F.—*The Milling of Tungsten Ores.* [Small uncovered installations are usually employed in this class of operations in Colorado].—E. & M. J. April 22 1916; p 717; pp 1¾*; 25c.

Mills, L. D.; Kuryla, M. H.—*Crushing and Grinding.* [A paper read before the A. I. M. E. Crushing costs, applicability of different kinds of crushing, with discussion of the same and a general review of crushing machinery, are given].—Mex. Mg. Jnl. May 1916; p 173; pp 3; 35c.

Palmer, L. A.—*The Central Mill of the North Star Mines Co., California.* [Gives considerable detail on the crushing, concentration, amalgamation, slime treatment and milling costs].—Met. & Chem. Engg. Jan. 1 1916; p 35; pp 3¾*; 30c.

Storey, O. W.—*Electrolytic Iron Gains Importance.* [A paper read before the Amer. Elect. Chem. Soc. Gives a description of the process and nature of the iron produced with figures on the cost of constructing a plant and a detailed cost table on operations].—I. Tr. Rev. May 11 1916; p 1043; pp 3; 25c.

Storey, O. W.—*Review of Progress in Electrolytic Iron.* [A paper read before the American Electro. Chem. Soc. Besides a review of the process and its possibilities an estimate sheet of a complete plant is given].—Chem. Eng. May 1916; p 178; pp 3¾; 35c.

Storey, O. W.—*Review of Recent Progress in Electrolytic Iron.* [A paper read before the American Electrochemical Soc. Gives synopsis of several methods and detailed figures on the cost of construction and operation of a plant and production of the electrolytic iron].—Met. & Chem. Engg. May 1 1916; p 534; pp 3; 30c.

Thum, E. E.—*Cost Accounting in the Construction and Operation of a Copper Smelter.* [A description of systems used by the Anaconda Copper Co., with some detailed cost figures].—Met. & Chem. Engg. May 1 1916; p 529; pp 4¾*; May 15 1916; p 573; pp 2½; June 1 1916; p 660; pp 2¾; 90c.

——— *Cyaniding by Continuous Decantation at Two Nevada Silver Mills.* [Pittsburgh-Dolores and Rochester are the mills here described. Costs and methods of operation are given].—Met. & Chem. Engg. April 15 1916; p 435; pp 5¼*; 30c.

——— *Hollinger Costs in* 1915. [Detailed descriptive and tabulated information].—Canadian Mg. Jnl. June 1 1916; p 272; pp 2; 35c.

——— *Nevada Consolidated Copper Co., Nevada.* [Abst. from annual report. Information on finances, prospecting, ore reserves, milling and smelting, and mining costs and operations].—E. & M. J. April 22 1916; p 734; pp 1¼; 25c.

——— *Ray Consolidated Copper Co.,*

Arizona. [Abst. from annual report. Information on mining and milling costs, reserves and production].—E. & M. J. April 22 1916; p 738; pp 1¼; 25c.

——— *The Union Tin Industry in* 1915 *South Africa.* [Gives the operations of companies and cost of tin plant in these placer fields].—S. Afr. Mg. Jnl. Dec. 18 1915; p 367; pp 1; 35c.

——— *Utah Copper Co., Utah.* [Abst. from annual report. Mill and mine operations are given with costs and production for the same. Figures of interest in operating and finances are also given].—E. & M. J. April 22 1916; p 733; pp 1¾; 25c.

——— *Zinc Ores, Their Occurrence and Utilization.* [Descriptions of the deposits in various countries are given briefly. Prices of the ore and methods of computing its value are given, as well as costs of smelting and methods for the same].—Bull. Imperial Inst., London; p 44; pp 37; 75c.

MILL MISCELLANY

Dwyer, C. E.—*Tonnage Formulas.* [A chart combining tons of feed, acid used and oil used].—M. & S. P. May 20 1916; p 737; pp 1¼*; 20c.

Elder, R. B.—*An Automatic Pulp Sampler.* [Consists of a wheel inserted in the main flow, which throws some of the pulp to a by-pass for a sample].—E. & M. J. Mar. 18 1916; p 524; pp 2¼*; 25c.

Free, E. E.—*Rate of Slimes Settling.* [Experimental work having to do with the rate at which various slimes settle. Some are slow due to the colloidal properties which they possess].—E. & M. J. April 15 1916; p 681; pp 5½; 25c.

Jackling, D. C.—*A Year's Results at the Chino Copper Property, New Mexico.* [Abst. from the annual report. Milling and mining operations are given with figures on production and the itemized cost for the same].—Mg. World April 22 1916; p 787; pp 1¾; 10c.

Livermore, Robert.—*Mining Districts of Northern Ontario.* [A review of the geology, mining and milling in northeastern Ontario, confined mostly to gold and silver].—M. & S. P. Jan. 15 1916; p 89; pp 3¾*; 20c.

MacKenzie, Geo. C.—*Ore Dressing and Metallurgical Laboratories of the Canadian Department of Mines.* [A description of their equipment and operations published by permission of the Director of Mines].—Canadian Mg. Inst. Bull. Jan. 1916; p 40; pp 7½*; 35c.

Marriot, H. F.—*Transvaal Mining in* 1915. [Doings of the mines and mills and gem industry during the year, with production figures].—E. & M. J. Jan. 8 1916; p 122; pp 2; 25c.

McCaskey, H. D.—*Gold and Silver in* 1914. [A general report on the industry, with short miscellaneous items on the mills and production of the country].—Min. Res. of U. S. I:23; pp 37.

Megraw, H. A.—*Metallurgy of Gold and Silver.* [Treats on the progress in Mexico; the Rand, South Africa; Arizona and Colorado, besides a note on the Tough-Oakes mill, Ontario].—E. & M. J. Jan. 8 1916; p 94; pp 2½; 25c.

Ralston, O. C.—*The Control of Ore Slimes.* [Published by permission of the U. S. G. S. Treats on the colloidal properties of slimes and other of their peculiarities which often affect their successful treatment].—E. & M. J. April 29 1916; p 763; pp 6¼*; 25c.

Ralston, O. C.—*The Control of Ore Slimes.* [Published by permission of the U. S. Bur. of Mines. Deals with the effect of heat and other agencies in the settling of slimes. Curves of various kinds are reproduced].—E. & M. J. May 20 1916; p 890; pp 4¾*; 25c.

Richards, R. H.—*Evolution of Ore-Dressing Methods.* [A paper read before the International Engineering Congress].—Mex. Mg. Jnl. Jan. 1916; p 17; pp 2½; 35c.

Ritter, E. A.—*Recent Milling Practice in San Juan County, Colorado.* [Gold and silver ores with base metals are found. Brief descriptions of most of the important milling plants are given and one flotation plant is described].—Mg. World Jan. 15 1916; p 111; pp 6½*; 10c.

Smith, R. W.—*Flotation Replaces Cyanide.* [Describes a practical system for gold-silver ores in copper sulphide. Milling costs and many details of operation are given].—E. & M. J. Jan. 15 1916; p 142; pp 2½*; 25c.

Smith, W. J.—*Angles, Elbows and Lay-Out Construction by New Method.* [A unique method for the making of curves, etc., in any kind of pipe or flume lines in the mine, mill or smelter].—Mg. World Jan. 29 1916; p 191; pp 3¼*; 10c.

Tupper, C. A.—*Flotation—Its Progress and Its Effects Upon Mill Design.* [A review of the development in this method during 1915, most of which is devoted to copper ores and some to lead].—Mg. World Jan. 1 1916; p 1; pp 14*; 10c.

Worden, H. B.—*Redwood Stave Pipe for Mining and Power Use.* [For hy-

draulic giants and other placer equipment, hydroelectric plants, and direct hydraulic power].—Mg. World Jan. 29, 1916; p 195; pp 3¼*; 10c.

——— *Alaska Juneau Gold Mining Co., Alaska.* [Details of mining and milling operations].—E. & M. J. May 20 1916; p 911; pp 1¼; 25c.

——— *El Oro District, Estado de Mexico, During* 1915. [A general outline of operations and conditions during the year].—E. & M. J. Jan. 29 1916; p 209; pp 1½*; 25c.

——— *Mill and Smelter Construction in* 1915. [Editorial review on the progress in lead, zinc, copper, silver and gold smelters, mills and hydrometallurgical plants].—Mg. World Jan. 1 1916; p 17; pp 15*; 10c.

——— *Mining in Rhodesia.* [Mining and milling operations in the copper and gold fields, giving costs and figures on production].—E. & M. J. Jan. 15 1916; p 136; pp 1¼; 25c.

——— *The Use of Welding Outfits at Mines and Smelters.* [An editorial review of the applicability of oxy-acetylene welding outfits in mines and mills for repairing heavy machinery].—Mg. World Jan. 22 1916; p 151; pp 4¼*; 10c.

CHEMISTRY AND ASSAYING.

CHAPTER XVII.

CHEMISTRY

Barnitz, H. L.—*The Technical Production of Hydrogen and Its Industrial Application.* [Reprint from Met. & Chem. Engg. It is used to make the oxy-hydrogen flame for welding. Several different processes are described in general and some details given].—Barnitz, New York; pp 11; 30c.

Cain, J. R.; Schramm, E.; Cleaves, H. E.—*Preparation of Pure Iron and Iron-Carbon Alloys.* [Discusses method of making source of contamination of other minerals and methods of chemical analysis].—U. S. Bur. of Stand. Sci. Paper 266; pp 25*.

Chance, E. M.—*The Application and Earning Power of Chemistry in the Coal Mining Industry.* [Points out and talks of the savings to be had by the well directed application of chemistry in coal mining. Also speaks of analyzing coals].—Bull. A. I. M. E. April 1916; p 711; pp 4; 35c. Met. & Chem. Engg. April 15 1916; p 441; pp 2; 30c.

Clarke, F. W.—*The Data of Geochemistry.* [A complete treatise on the chemical composition, etc., of rocks, minerals and other substances allied with geology]. U. S. G. S. Bull. 616; pp 821.

Clennell, J. E.—*Estimating Aluminum in Aluminum-Dust.* [Comparative methods are herein described for estimating the aluminum in aluminum-dust for cyanidation work].—E. & M. J. May 6 1916; p 813; pp 2¼; 25c.

Coghill, W. H.—*Research Problems.* [Speaks of his experience in encountering metallurgical problems and describes the way in which he solved them].—M. & S. P. Jan. 29 1916; p 159; pp 2; 20c.

Coltman, R. W.—*The Iodide Method Applied to the Determination of Copper in the Presence of Tin.* [From the Jnl. of Industrial & Engg. Chem.].—Chem. Eng. Jan. 1916; p 38; pp 1½; 35c.

Crook, W. J.; Booth, L. E.; Thiel, A.—*Electrolysis of Alkaline Solutions of Potassium Sulphocyanate.* [A very detailed treatise with figures and description of the chemistry applied thereto].—Met. & Chem. Engg. May 15 1916; p 587; pp 4¼; 30c.

De Lumen, M.—*The Roasting of Blende.* [The effect of constitutents of blende on sulphur elimination and roasting process. The Hasenclever, Delplace, Hegler, McDougal and Spirlet furnaces are described. Comments on the gases for sulphuric acid manufacture in England, Belgium and Germany].—E. & M. J June 10 1916; p 1021; pp 3¾; 25c.

Deming, H. G.—*The Use of Diagrams in Chemical Calculations.* [Treats on the using of established curves for figuring results].—Jnl. Ind. & Eng. Chem. Mar. 1916; p 264; pp 8½*; 60c.

Findlay, Alexander.—*Practical Physical Chemistry.* [A revised edition of the publication which first appeared 1905].—Longmans Green & Co., London; book; pp 327*; $1.50.

Foulk, C. W.—*Introductory Notes on Quantitative Chemical Analysis.* [Third edition].—McGraw-Hill; book; pp 250*; $2.

Hartmann, M. L.—*The Chemistry and Matallurgy of Tungsten.* [Thermic methods of refining, the compounds of tungsten and methods of qualitative and quantitative analysis are given].—Pahasapa Qt'ly Feb. 1916; p 25; pp 10; 35c.

Hatschek, E.—*An Introduction to the Physics and Chemistry of Colloids.* [Describes the theory of the phenomena of colloids in detail and is of use in experimental work with flotation].—Blakiston's Sons, Phil.; book; pp 107*.

Hoffmann, Fritz.—*Die Formeln zur Indirekten Analyse von Generatorgas.* [A form for the indirect computation of the analysis of producer gases].—Chem. Ztg. Jan. 22 1916; p 81; pp 1½; 35c.

Jamieson, G. S.—*On the Volumetric Determination of Tin Potassium Iodate.* [Gives the results of some analyses made and a complete chemical explanation of the method of procedure].—Jnl. Ind. & Chem. Engg. June 1915; p 500; pp 2; 60c.

Johnson, J. E., Jr.—*The Calculation of the Burden of the Blast Furnace.* [A complete treatise on the chemistry and computations of charges and other items which have to do with amounts and things which the blast furnace can take care of].—Met. & Chem. Engg. May 1, 1916; p 520; pp 4¾; 30c.

Johnson, W. M.—*A Chemical Explanation of the Effect of Oxygen in Strengthening Cast Iron.* [Reveals strength and other properties affected by the oxygen

content].—A. I. M. E. Bull. Feb. 1916; p 233; pp 3; 35c.

Lewis, J. V.—*Determinative Mineralogy, with Tables for the Determination of Minerals by Means of Their Chemical and Physical Characters.*—Wiley & Son; book; pp 155*; $1.50.

Liddell, D. M.—*Metallurgists' and Chemists' Handbook.* [Contains data, prices, production, methods of assay, analysis, cyanidation, ore-dressing, and infromation on fuels, refractories, design and construction, etc.].—McGraw-Hill; book; pp 603*; $4.

Lomax, J.—*Micro-Chemical Examination of Coal in Relation to Its Utilization.* [From a paper read before the Manchester Geological and Mining Soc. The chemical properties as detected by the microscope are brought out, as also are the methods of preparing the slide].—Coll'y Guard. May 12 1916; p 909; pp 1; 35c.

Lowry, T. M.—*Historical Introduction to Chemistry.* [Describes earlier methods and their evolution into their present form].—MacMillan & Co., London; book; pp 581*; $2.50.

Lunge, George; Keane, C. H.—*Technical Methods of Chemical Analysis.* [A translation of Vol. III from the German and dealing mostly with organic chemistry].—Gurney & Jackson, London; book; pp 1125*; $16.

Matheson, A. M.—*Notes on the Chemical Assay of Tin Ores.* [Shows the difference between fire and chemical assays on high pyritic tin ores and the impossibility of estimating mill losses by the vanning and fire assay].—Proc. Aus. Inst. M. E.; N. S. No. 21 1916; p 1; pp 7; 65c.

McGrigor, G. D.—*Field Analysis of Minerals.* [A number of dry and wet chemical qualitative tests for distinguishing minerals in the field].—Tech. Bookshop, London; book; pp 86*; $1.50.

McLennan, J. F.—*Gold-Quartz Replacements in Intrusive Rock.* [On the genesis, geology, etc., of secondary gold-bearing quartz in intrusive rocks].—Mg. World Feb. 19 1916; p 389; pp 3½; 10c.

Minnig, H. D.—*The Separation and Estimation of Aluminum and Beryllium by the Use of Acetyl Chloride in Acetone.* [Chemical details of procedure].—Amer. Jnl. of Sci. Nov. 1915; p 482; pp 3; 60c.

Moir, James.—*Analysis of Niobium-Titanium Minerals, with Some New Tests for Niobium, Tantalum and Titanium.*—Jnl. Chem. Met. & Mg. Soc., S. Afr. Mar. 1916; p 189; pp 2; 85c.

Moir, James.—Some New Methods of Testing for Molybdenum. [Chemical methods for the qualitative analysis of the mineral].—Jnl. Chem. Met. & Mg. Soc. S. Afr. Mar. 1916; p 191; pp 1; 85c.

Ostwald, W.—*A Handbook of Colloid-Chemistry: The Recognition of Colloids, the Theory of Colloids and Their Chemico—Physical Properties.* [The book was translated from the German by M. H. Fischer].—P. Blakistons Sons & Co., Philadelphia, Pa.; book; pp 266*; $3.

Peters, C. A.; Sauchelli, V.—*Succinic Acid as a Standard.* [The use of this acid for standardizing solutions for volumetric analysis in place of using ammonium hydroxide].—Amr. Jnl. of Sci. Mar. 1916; p 244; pp 5*; 60c.

Probert, F. H.—*Surficial Indications of Copper.* [Discusses and describes in detail the chemistry of the oxidized zone].—M. & S. P. June 17 1916; p 893; pp 6¾*; 20c.

Rankin, G. A.—*The Chemistry of Portland Cement.* [A paper read before the American Concrete Inst., treating on the chemical combinations, etc., had in the mixture at various temperatures during the process of cintering].—West. Engg. May 1916; p 172; pp 5*; 25c.

Robinson, H. H.—*The Summation of Chemical Analysis of Igneous Rocks.* [A discussion on the analyzing of rocks and results obtained rather than a description of methods of analysis].—Amr. Jnl. of Sci. Mar. 1916; p 257; pp 9*; 60c.

Rose, T. K.—*The Metallurgy of Gold.* Separate chapters take up subjects related to gold as: Methods of extraction, concentration, alloys, chemistry, placer deposits, crushing, geology, assaying, etc. Reasons for, rather than a bare explanation, is the policy].—J. B. Lippincott Co.; pp 601*; book; $6.50.

Seligman, R.; Williams, P.—*The Action of Boiling Acetic, Propionic and Butyric Acids on Aluminum, with a Note on the Action of Formic and Some Higher Acids.* [Results of experimental work].—Jnl. of Soc. Chem. Indst. Jan. 31 1916; p 88; pp 5½; 50c.

Smith, C. E.—*Some Sources of Error in the Iodometric Determination of Copper.* [A method for chemical analysis and correct methods of obtaining the sample].—Met. & Chem. Engg. April 1 1916; p 379; pp 1¼; 30c.

Storm, C. G.—*The Analysis of Permissible Explosives.* [Methods of quantitative analysis and methods of testing explosives are given. The classification and properties of the explosives are treated on some in conjunction therewith].—U. S. Bur. of Mines Bull. 96; pp 88*; 25c.

Tamaru, S.—*The Experimental Technics of Calorimetric Measurements at High Temperatures.* [A purely theoretical treatise on the subject].—Jnl. Soc. of Chem. Indst. Jan. 31 1916; p 81; pp 7½*; 50c.

Turner, W. A.—*The Determination of Vanadium by Cupferron.* [The results of experimental work in which some of the reactions are of use as qualitative tests. Cupferron is in the class of nitro-ammonium salts].—Amr. Jnl. of Sci. April 1916; p 339; pp 5; 60c.

Wiley, C. N.—*The Role of the Chemist in the Cement Industry.* [A paper read before the American Chemical Soc.].—Chem. Engg. Mar. 1916; p 92; pp 1½; 35c.

Willows, R. S.—*Surface Tension and Surface Energy and Their Influence on Chemical Phenomena.* [A series of lectures delivered at the Sir John Cass Technical Inst.].—J. A. Churchill, London; book; pp 80*; 75c.

Ziegel, H.—*Brief Course in Metallurgical Analysis.* [Alternate pages are ruled for tabulating results of analysis. The book is intended for students who have had some previous analytical study].—Chem. Pub. Co., Easton, Pa.; book; pp 72*; $1.

Zschiegner, H.—*An accurate End-Point in the Volumetric Determination of Sulphur in Steel.*—Jnl. of Indst. & Engg. Chem. April 1916; p 324; pp ¾; 60c.

——— *Society of Chemical Industry.* [New York meeting April 21. Papers on the "Application of Centrifugal Forces to Suspensions and Emulsions" and "The American By-Product Coke Oven Industry" are reproduced].—Met. & Chem. Engg. May 1 1916; p 500; pp 4½; 35c.

——— *Tungsten-Molybdenum.* [Several briefs on the metals and their minerals, with chemical test and methods of analysis for the same].—Colo. School Mines Mag. Mar. 1916; p 53; pp 6; 35c. Mex. Mg. Jnl. May 1916; p 168; pp 3½; 35c.

ELECTROCHEMISTRY

Addicks, Lawrence. — *Electrochemical Industries and Their Interest in the Development of Water Powers.* [A general talk on the relation of hydroelectric power to the electrochemical industry].—Bull. A. I. M. E. May 1916; p 553; pp 8; 35c.

Beckman, J. W.—*Electrochemical Possibilities of the Pacific Coast.* [A paper read before the American Electrochemical Soc. The questions of labor, raw material, both metals and non-metals, markets, etc., are taken up].—Mg. & Oil Bull. April 1916; p 101; pp 6¾*; 25c. Jnl. of Elect. Power & Gas Feb. 26 1916; p 163; pp 4*; 35c.

Burgess, C. F.; Cravens, G. W.—*Applied Electrochemistry and Welding.* [Two separate books bound into one volume. Electric welding is given considerable consideration, although other methods are described].—American Tech. Soc., Chicago; book; pp 215*; $1.50.

Crook, W. J.; Booth, L. E.; Thiel, A.—*Electrolysis of Alkaline Solutions of Potassium Sulphocyanate.* [A very detailed treatise with figures and description of the chemistry applied thereto].—Met. & Chem. Engg. May 15 1916; p 587; pp 4¼; 30c.

Holde, D.—*Die Leitfähigkeit und die Elektrische Erregbarkeit Flüssiger Isolatoren.* [On the control and excitability of electrolytes].—Zts. Elektrochem. Jan. 1 1916; p 1; pp 4¼*; 50c.

Holler. H. D.; Peffer, E. L.—*Relation Between Composition and Density of Aqueous Solutions of Copper Sulphate and Sulphuric Acid.* [The work has a direct bearing on the electrolysis of copper].—U. S. Bur. of Stand.; Sci. Paper 275; pp 9*.

Koepping, E. D.—*The Electrolytic Determination of Copper in Copper-Manganese.* [Details for the method of procedure are given for the analysis of copper in the presence of large quantities of manganese].—Met. & Chem. Engg. April 15 1916; p 441; pp 1¼; 30c.

Mathers, F. C.; Kuebler, J. R.—*Addition Agents in the Electro-Deposition of Silver from Silver Nitrate Solutions.* [Takes up laboratory work done in this connection]. — American Electrochem. Soc. Bull. p 131; pp 13*; 35c.

Watts, O. P.—*An Electric Arc Furnace for the Laboratory.* [A paper read before the Electrochemical and Metallurgical Inst. Describes its detailed construction, operation and tests made on].—Met. & Chem. Engg. June 15 1916; p 681; pp 2½*; 30c.

——— *Tasmania and the Electro-Chemical Industry.*—Mg. Jnl. June 3 1916; p 1; pp 1½; 35c.

ASSAYING AND ANALYSIS

Allen, E. T.—*The Composition of Natural Bornite.* [Gives analyses and other information on this copper-sulphide mineral].—Amer. Jnl. of Sci. May 1916; p 409; pp 5; 60c.

Anderson, R. P.; Biederman, W.—*Reagents for Use in Gas Analysis.* [The article consists of 2 parts. The first treats on analysis with pipettes and solution, while the second speaks of using phosphorus in solution, rather than the solid form, for absorbing oxygen].—Jnl. of Indst. & Engg. Chem. Feb. 1916; p 131; pp 4½*; 60c.

Bailey, E. G.—*Interpretation of Coal Analysis.* [A paper read before the International Railway Fuel Ass'n. A review of what the results of a coal analysis mean].—Pract. Eng. June 15 1916; p 527; pp 2½; 20c.

Briggs, Henry.—*Rapid Estimation of Oxygen and Blackdamp.* [A paper read before the Mining Inst. of Scotland].—Coll'y Guard. Feb. 25 1916; p 359; pp 2*; 35c.

Burns, K.; Meggers, W. F.; Merrill, P. W.—*Interference Measurements of Wave Lengths in the Iron Spectrum.* [Of use in identifying other chemical contents by use of the spectroscope].—U. S. Bur. of Stand.; Sci. Paper 274; pp 32*.

Burrell, G. A.; Gauger, A. W.—*The Composition of the Rock Gas of the Cripple Creek Mining District, Colorado.* [Published by permission of the Director of the U. S. G. S. Analyses are given of the gases which are supposed to emanate from the last of the now extinct Cripple Creek volcano].—Bull. A. I. M. E. May 1916; p 843; pp 21; 35c.

Cain, J. R.; Cleaves, H. E.—*Determination of Carbon in Steels and Irons by Direct Combustion in Oxygen at High Temperatures.*—U. S. Bur. Stand. Tech. Paper 69; pp 10*. Jnl. of Indst. & Engg. Chem. April 1916; p 321; pp 2¾*; 60c.

Cain, J. R.; Schramm, E.; Cleaves, H. E.—*Preparation of Pure Iron and Iron-Carbon Alloys.* [Discusses method of making source of contamination of other minerals and methods of chemical analysis].—U. S. Bur. of Stand. Sci. Paper 266; pp 25*.

Chance, E. M.—*The Application and Earning Power of Chemistry in the Coal Mining Industry.* [Points out and talks of the savings to be had by the well directed application of chemistry in coal mining. Also speaks of analyzing coals].—Bull. A. I. M. E. April 1916; p 711; pp 4; 35c.

Clennell, J. E.—*Estimating Aluminum in Aluminum-Dust.* [Comparative methods are herein described for estimating the aluminum in aluminum-dust for cyanidation work].—E. & M. J. May 6 1916; p 813; pp 2¼; 25c.

Coltman, R. W.—The Iodide Method Applied to the Determination of Copper in the Presence of Tin. [From the Jnl. of Industrial & Engg. Chem.].—Chem. Eng. Jan. 1916; p 38; pp 1½; 35c.

Deming, H. G.—*The Use of Diagrams in Chemical Calculations.* [Treats on the using of established curves for figuring results].—Jnl. Ind. & Eng. Chem. Mar. 1916; p 264; pp 8½*; 60c.

Dudley, Boyd, Jr.—*The Distribution of Silver Between Metallic Lead and Litharge Containing Slag.* [Formulæ which may be used for correction of this loss are given and a complete review of investigations made to determine what amount of silver is in the lead and what part in the litharge slag, is given].—Met. & Chem. Engg.; June 1 1916; p 636; pp 6*; June 15 1916; p 695; pp 6*; 60c.

Farrington, O. C.—*Studies of Brazilian Favas.* [Favas is the name given to a number of rare mineral-stones occurring with diamonds. Analysis and the results of investigation are here given].—Amr. Jnl. of Sci. April 1916; p 355; pp 6; 60c.

Freeman, C. C.—*Ferrocyanide Determination of Zinc.* [Abstracted from an article in the Jnl. of the Chamber of Mines, West Australia].—Mex. Mg. Jnl. April 1916; p 127; pp 1; 35c.

Foulk, C. W.—*Introductory Notes on Quantitative Chemical Analysis.* [Third edition].—McGraw-Hill; book; pp 250*; $2.

Gudgeon, C. W.—*The Scheelite-Gold Mines of Otago, New Zealand.* [The geology is taken up and several properties described. Mill flow-sheets and milling and mining costs are given, besides a brief on a wet method for assaying pyritic scheelite for tungsten].—Proc. Aus. Inst. M. E.; N. S. No. 21 1916; p 37; pp 14*; 65c.

Hall, W. T.—*The Determination of Antimony in the Products Obtained by Roasting Stibnite.* [Roasting antimony sulphide will produce a trisulphide, trioxide, tetroxide and some unoxidized antimony. The article gives a method for analysis of this combination].—A. I. M. E. Bull. Jan. 1916; p 99; pp 3*; 35c.

Hallett, R. L.—*Analysis of Fuel Gas.* [Use is made of the electrical explosion pipette].—E. & M. J. April 29 1916; p 779; pp 1¾*; 25c.

Hance, J. H.—*Segregation in Gold Bullion.* [Gold tends to segregate to different parts of the bullion bar and unless care is taken will make erroneous samples. Methods of sampling and assaying are here described].—A. I. M. E. Bull. Feb. 1916; p 299; pp 28*; 35c. Mg. World Mar. 25 1916; p 601; pp ¾; 10c.

Hartmann, M. L.—*The Chemistry and Metallurgy of Tungsten.* [Thermic methods of refining, the compounds of tungsten and methods of qualitative and quantitative analysis are given].—Pahasapa Qt'ly Feb. 1916; p 25; pp 10; 35c.

Hoffman, Fritz.—*Die Formeln zur Indirekten Analyse von Generatorgas.* [A form for the indirect computation of the analysis of producer gases].—Chem. Ztg. Jan. 22 1916; p 81; pp 1½; 35c.

Hood, O. P.; Kudlich, R. H.; Burrell, G. A.—*Gasoline Mine Locomotives in Relation to Safety and Health.* [On the care and adjustment to make the least obnoxious gases. Methods for analyzing the exhaust gases are also given].—U. S. Bur. of Mines Bull. 74; pp 83*.

Jamieson, G. S.—*On the Volumetric Determination of Tin by Potassium Iodate.* [Gives the results of some analyses made and a complete chemical explanation of the method of procedure].—Jnl. Ind. & Chem. Engg. June 1916; p 500; pp 2; 60c.

Jenkins, O. P.—*Phosphates and Dolomites of Johnson County, Tennessee.* [The geologic history, mineralogy, occurrence analyses of samples and geological structure of the country are all considered].—Res. of Tenn. April 1916; p 51; pp 56*.

Koepping, E. D.—*The Electrolytic Determination of Copper in Copper-Manganese.* [Details for the method of procedure are given for the analysis of copper in the presence of large quantities of manganese].—Met. & Chem. Engg. April 15 1916; p 441; pp 1¼; 30c.

Kreisinger, Henry; Ovitz, F. K.—*Sampling and Analyzing Flue Gases.* [Complete details of methods and apparatus are given for analyzing gases for their components].—U. S. Bur. of Mines Bull. 97; pp 70*.

Krone, O. A.—*A New Accurate Method of Gas Analysis.* [Contains the general method of absorption].—Jnl. Ind. & Eng. Chem. Mar. 11 1916; p 231; pp 5¾*; 60c.

Lamble, B. C.—*The Sampling and Assaying of Molybdenum Ores.* [The methods here given are those practiced by the Orillia Molybdenum Co., Ont.].—Canadian Mg. Jnl. April 15, 1916; p 185; pp 1¼; 35c.

Lang, Herbert.—*Quicksilver Reduction.* [The nature of the ores, methods of assay, concentration of ores, metallurgy and condensation of the metal and diseases caused from mercury are taken up].—M. & S. P. May 13 1916; p 707; pp 8*; 20c.

Levy, D. M.; Jones, H.—*The Morro Velho Method of Assay of Gold-Bearing Cyanide Solutions.* [Abst. from the Trans. of the Inst. of Mg. & Met.].—Mex. Mg. Jnl. Mar. 1916; p 83; pp ¾; 35c.

Lewis, J. V.—*Determinative Mineralogy with Tables for the Determination of Minerals by Means of Their Chemical and Physical Characters.*—Wiley & Son; book; pp 155*; $1.50.

Liddell, D. M.—*Metallurgists' and Chemists' Handbook.* [Contains data, prices, production, methods of assay, analysis, cyanidation, ore-dressing, and information on fuels, refractories, design and construction, etc.].—McGraw-Hill; book; pp 603*; $4.

Lunge, George.—*Technical Gas Analysis.* [New methods and apparatus are described in this book translated from German].—Gurney & Jackson, London; book; pp 407*; $4.25.

Lunge, George; Keane, C. H.—*Technical Methods of Chemical Analysis.* [A translation of Vol. III from the German and dealing mostly with organic chemistry].—Gurney & Jackson, London; book; pp 1125*; $16.

Matheson, A. M.—*Notes on the Chemical Assay of Tin Ores.* [Shows the difference between fire and chemical assays on high pyritic tin ores and the impossibility of estimating mill losses by the vanning and fire assay].—Proc. Aus. Inst. M. E.; N. S. No. 21 1916; p 1; pp 7; 65c.

McGrigor, G. D.—*Field Analysis of Minerals.* [The methods are mostly chemical].—Mg. Mag.; book; pp 88*; $1.

Moir, James.—*Analysis of Niobium-Titanium Minerals, with Some New Tests for Niobium, Tantalum and Titanium.*—Jnl. Chem. Met. & Mg. Soc., S. Afr. Mar. 1916; p 189; pp 2; 85c.

Moore, H. C.—*A Rapid Control Method for the Determination of Sulphur in Pyrite Cinders.* [Consists first of fusing with sodium peroxide].—Jnl. of Indt. & Engg. Chem. Jan. 1916; p 27; pp 1¾; 60c.

Perry, E. H.—*Interpretation of Assay Curves for Copper Drill Holes.* [Abst. of a paper read before the A. I. M. E. This is one of a series of papers to be read on the investigation of secondary enrichment].—E. & M. J. April 22 1916; p 726; pp 2½*; 25c.

Perry, E. H.; Locke, A.—*Interpretation of Assay Curves for Drill Holes.* [Brings up many deceptive points obtained from drill results, discussing each and giving remedies for the same].—A. I. M. E. Bull. Feb. 1916; p 195; pp 7*; 35c.

Peters, C. A.; Sauchelli, V.—*Succinic Acid as a Standard.* [The use of this acid for standardizing solutions for volumetric analysis in place of using ammonium hydroxide].—Amr. Jnl. of Sci. Mar. 1916; p 244; pp 5*; 60c.

Plumb, A. M.—*Ore Valuation—How Arrived At.* [It is here shown that assay values multiplied by market values does not give the value of ore. The value of various grades of concentrates must be estimated and the value per ton computed therefrom].—Mg. World Jan. 8 1916; p 71; pp 1¼; 10c.

Pratt, W. E.—*The Occurrence of Petroleum in the Philippines.* [Speaks of several occurrences of petroleum and describes the stratigraphy. Analyses of the oils are given].—Eco. Geol. May 1916; p 246; pp 20*; 60c.

Raefler, F.—*Die Brauneisenerzlagerstätten Oberschlesiens.* [Analyses, geology, mode of occurrence and production statistics are given for the iron fields of upper Salesia, Europe. The ore is hematite and limonite].—Berg & Hütt. Rund. Dec. 5 1915; p 11; pp 7; 35c.

Randall, C. A.—*Metallurgy at Tough-Oakes Gold Mines, Ltd., Ontario.* [The description is very complete and gives a large amount of specific data, assays, results of tests, etc.].—Canadian Mg. Jnl. May 1 1916; p 225; pp 5*; 35c.

Robie, E. H.—*Method of Determining Dust Loss, at Copper Cliff, Ontario.* [The equipment and method of procedure are described in detail].—E. & M. J. Mar. 18 1916; p 505; pp 3½*; 25c.

Robbins, H. E.—*Conductivity Cell for Electro-Titration.* [A description and drawing of the same].—Amr. Jnl. of Sci. Mar. 1916; p 249; pp 2*; 60c.

Robinson, H. H.—*The Summation of Chemical Analysis of Igneous Rocks.* [A discussion on the analyzing of rocks and results obtained rather than a description of methods of analysis].—Amr. Jnl. of Sci. Mar. 1916; p 257; pp 9*; 60c.

Rose, T. K.—*The Metallurgy of Gold.* [Separate chapters take up subjects related to gold as: Methods of extraction, concentration, alloys, chemistry, placer deposits, crushing, geology, assaying, etc. Reasons for, rather than a bare explanation is the policy].—J. B. Lippincott Co.; pp 601*; book; $6.50.

Smith, C. E.—*Some Sources of Error in the Iodometric Determination of Copper.* [A method for chemical analysis and correct methods of obtaining the sample].—Met. & Chem. Engg. April 1 1916; *p 379; pp 1¼;* 30c.

Storm, C. G.—The Analysis of Permissible Explosives. [Methods of quantitative analysis and methods of testing explosives are given. The classification and properties of the explosives are treated on some in conjunction therewith].—U. S. Bur. of Mines Bull. 96; pp 88*; 25c.

Szchiegner, H.—*An Accurate End-Point in the Volumetric Determination of Sulphur in Steel.*—Jnl. of Indst. & Engg. Chem. April 1916; p 324; pp ¾; 60c.

Torossian, G.—*A Simple and Rapid Determination of Lead.*—Jnl. of Indst. & Engg. Chem. April 1916; p. 331; pp ¾; 60c.

Turner, W. A.—*The Determination of Vanadium by Cupferron.* [The results of experimental work in which some of the reactions are of use as qualitative tests. Cupferron is in the class of nitro-ammonium salts].—Amr. Jnl. of Sci. April 1916; p 339; pp 5; 60c.

White, E. E.—*Analysis of Slate and Dike.* [These formations are hard to distinguish by their physical characters on the iron ranges of Michigan and methods for chemical analysis are here given].—E. & M. J. Mar. 4 1916; p 433; pp 2; 25c.

Wysor, D. C.—*Aluminum Hydrates in the Arkansas Bauxite Deposits.* [Describes the deposits and gives the analysis of many samples taken from the various separate deposits].—Econ. Geol. Jan. 1916; p 42; pp 9; 60c.

Ziegel, H.—*Brief Course in Metallurgical Analysis.* [Alternate pages are ruled for tabulating results of analysis. The book is intended for students who have had some previous analytical study]. Chem. Pub. Co., Easton, Pa.; book; pp 72*; $1.

——— *Analysis and Assay of Zinc Retort Residue.* [Methods used in the American Zinc Co.'s plant for determining carbon, zinc, iron, sulphur, lead, copper, silica and silver].—Met. & Chem. Engg. Feb. 15 1916; p 200; pp 1½; 30c.

——— *Analyzed Irons and Steels—Methods of Analysis.* [Methods for determining the quantity of manganese, sulphur, carbon and similar other metals usually found in steel].—U. S. Bur. of Stand Circular No. 14; pp 17.

——— *International Smelting Co., Miami, Arizona.* [Analyses of products used and produced and details of equipment and operation are given, with a complete flowsheet of the plant].—M. & S. P. June 3 1916; p 822; pp 2*; 20c.

——— *Analysis and Assay of Zinc Retort Residue.* [Methods used in the American Zinc Co.'s plant for determining car-

bon, zinc, iron, sulphur, lead, copper, silica and silver].—Met. & Chem. Engg. Feb. 15 1916; p 200; pp 1½; 30c.

——— *Slide Rule's Use in Calculating Base-Bullion Assays.*—Met. & Chem. Engg. May 15 1916; p 561; pp 1*; 30c.

——— *Standard Density and Volumetric Tables.* [A complete compilation of tables with description for the use of the same].—U. S. Bur. of Stand.; Circular 19; pp 67.

——— *Testing of Glass Volumetric Apparatus.* [Testing and standard specifications are given on this class of apparatus].—U. S. Bur. of Stand.; Circular 9; pp 32*.

——— *Tungsten-Molybdenum.* [Several briefs on the metals and their minerals, with chemical test and methods of analysis for the same].—Colo. School Mines Mag. Mar. 1916; p 53; pp 6; 35c. Mex. Mg. Jnl. May 1916; p 168; pp 3½; 53c.

——— *Use of the Slide Rule in Calculating Base-Bullion Assays.*—Met. & Chem. Engg. May 15 1916; p 561; pp 1; 30c.

METALLURGY.

CHAPTER XVIII.

ELECTROMETALLURGY

Addicks, L.—*The Development of Electrolytic Copper Refining.* [A paper read before the International Engg. Cong. revealing the methods of operation for generating current, the operation of the process and the thermic metallurgy connected therewith].—Mex. Mg. Jnl. Feb. 1916; p 48; pp 2; 35c. Canadian Mg. Jnl. Jan. 1 1916; p 16; pp 2¼; 35c.

Betts, A. G.—*Electrolytic Antimony Refining.* [A paper read before the American Electrochemical Soc. on the electrolysis of antimony].—Chem. Eng. Mar. 1916; p 117; pp 4¾*; 35c.

Crawford, P. H.—*Working Data on Electrolytic Precipitation.* [Tabulated and other detailed figures on the results of operations].—M. & S. P. April 29 1916; p 634; pp 3½*; 20c.

Dupuy, E. L.; Portevin, A. M.—*La Thermo-Electricité des Aciers Spegiaux.* [Thermo-electric investigations in the steel industry].—Met. (French) Aug. 1915; p 657; pp 23*; 35c.

Falck, G. E.—*I. Forni Elettrici Nella Industria Metallurgica.* [On the production and operation of electrometallurgical steel plants].—Met. Italian Dec. 31 1915; p 751; pp 5; $1.

Gill, P. L.—*Multiple and Series Electrolytic Copper Refining.* [A description and comparison of the two methods].—E. & M. J. Jan. 1 1916; p 9; pp 1½; 25c.

Gosgrow, R. C.—*Coke as a Reducing Agent in the Electric Smelting Furnace.* [Details of operation for this practice is given, with discussion on the advantages and disadvantages].—Met. & Chem. Engg. June 15 1916; p 691; pp 3; 30c.

Gray, J. H.—*Electric Furnace Construction and Operation.* [A paper read before the American Foundrymen's Assn. Treats in a practical way on the design and operation of the furnace, with details on the electrical problems involved].—Foundry June 1916; p 241; pp 4½*; 25c.

Grosvenor, W. M.—*Magnesium.* [A general review of the metal, method of manufacture and production].—American Electrochem. Soc. Bull. p 163; pp 6; 35c.

Hixon, H. W.—*Electrothermic Zinc Smelting in Puebla, Mexico.* [A description of the operation of the Teziutlan Copper Co.'s plant is given. The ores run 4% copper and 10% zinc. The zinc is obtained as dust for cyanidation work].—E. & M. J. June 17 1916; p 1080; pp 1¼; 25c.

Ingalls, W. R.—*Electrolytic Zinc.* [A paper read before the American Chemical Society. Electrolytic refining of zinc and the relation of flotation to zinc metallurgy are taken up].—E. & M. J. Mar. 4 1916; p 425; pp 4¼; 25c. M. & S. P. Mar. 25 1916; p 439; pp 3½; 20c.

Ingalls, W. R.—*Metallurgy of Zinc in 1915.* [Retort discharging machines, redistillation and electrolytic refining are reviewed, with less important items].—E. & M. J. Jan. 8 1916; p 92; pp 2; 25c.

Kyle, W. J.—*Operating Data on An Important Electric Furnace Installation.* [A general review on electric-furnace practice, with special reference to the plant at Easton, Pa.].—Elect. Rev. & West. Elect. Feb. 26 1916; p 374; pp 3; 25c.

Later, E. P.—*The Electro-Deposition of Cobalt.* [Is rather on the electrodeposition of lead, giving details of procedure for the same].—Foundry April 1916; p 141; pp 2½; 25c.

Lyon, D. A.; Keeney, R. M.—*Feasibility of Western Electrometallurgy.* [Deals with iron, aluminum, zinc, copper, costs and other items of importance].—Jnl. of Elect. Power & Gas Mar. 25 1916; p 237; pp 3¾*; April 1 1916; p 262; pp 2; April 8; p 282; pp 3; April 15; p 296; pp 2½; April 22 1916; p 316; pp 2¼; April 29 1916; p 331; pp 3¾*; $2.05.

Mathers, F. C.; Kuebler, J. R.—*Addition Agents in the Electro Deposition of Silver from Silver Nitrate Solutions.* [A paper read before the American Electrochem. Soc.].—Chem. Eng. June 1916; p 243; pp 4½; 35c.

Mathews, J. A.—*Electric Furnaces in Steel Making.* [A paper read before the American Iron & Steel Inst. A review of the development of this type of furnace. The principal types are discussed and described, as also are the products from them].—I. Tr. Rev. June 8 1916; p 1264; pp 3; 25c.

McKnight, W. M.—*Some Faults of the Small Electric Arc Furnace for Melting and Refining Steel.*—Jnl. Elect. Power & Gas May 13 1916; p 376; pp 1¼; 35c.

Motherwell, A. B.—*Electrolytic Zinc.* [The Bradley-Williams process is de-

scribed. Here an acidified solution of zinc sulphate takes the zinc into solution from the ores and the zinc precipitated from it by electrolytic methods].—M. & S. P. Mar. 18 1916; p 401; pp 2½*; 20c.

Pascal, Paul; Jouniaux, A.—*Physikalisch-Chemische Untersuchungen Ueber die Elektrometallurgie des Aluminums.* [On the electrometallurgy of aluminum].—Zts. Elecktrochemie Feb. 1 1916; p 71; pp 4*; 50c.

Peters, F.—*Forschungen und Fortschritte auf dem Gebiet der Elektrometallurgie des Magnesium,* 1909-1915. [On the progress made in the electrometallurgy of magnesium since 1909].—Glückauf Feb. 19 1916; p 142; pp 7; 50c.

Peters, Franz.—*Forschungen und Fortschritte auf dem Gebeit der Elektrometallurgie des Aluminiums* 1906-1915. [Research and practice on the electrometallurgie of aluminum].—Glückauf Jan. 22 1916; p 5½; 50c.

Sill and Sill.—*An Electro-Cyanide Process.* [A method of electrical precipitation of gold and silver from cyanide solution].—Mg. & Oil Bull. Mar. 1916; p 89; pp 2½*; 25c.

Stansfield, Alfred.—*Electric Furnaces as Applied to Non-Ferrous Metallurgy.* [A paper read before the Institute of Metals on the use of the furnace for refining aluminum, magnesium, zinc, sodium, potassium, calcium, barium, strontium and cerium].—Mg. Jnl. April 8 1916; p 233; pp 2; 35c.

Stansfield, A.—*Electric Furnaces as Applied to Non-Ferrous Metallurgy.* [A paper read before the Institute of Metals and bearing on zinc, copper, nickel, lead, antimony, etc:].—Mg. Jnl. April 29 1916; p 291; pp 1½; 35c.

Storey, O. W.—*Electrolytic Iron Gains Importance.* [A paper read before the Amer. Elect. Chem. Soc. Gives a description of the process and nature of the iron produced with figures on the cost of constructing a plant and a detailed cost table on operations].—I. Tr. Rev. May 11 1916; p 1043; pp 3; 25c.

Storey, O. W.—*Review of Recent Progress in Electroyltic Iron.* [Reviews the results of investigation along this line which may eventually offer a method of working the low grade deposits now known].—American Electrochem. Soc. Bull. p 169; pp 11; 35c. Met. & Chem. Engg. May 1 1916; p 534; pp 3; 30c. Chem. Eng. May 1916; p 178; pp 3¾; 35c.

Tone, F. J.—*Electric Furnace Development at Niagara Falls.* [A paper presented at the American Electrochemical Soc. relating to the electric power from the Falls to the metallurgy of iron alloys and other more rare metals].—Mg. World May 13 1916; p 907; pp 2¾; 10c.

Vail, R. H.—*Tin Smelting at Perth Amboy, N. J.* [Bolivian concentrates are handled here and the first tin was produced on Mar. 7. The concentrates are first smelted and cast into anodes, after which they are electrolytically refined].—E. & M. J. May 27 1916; p 927; pp 2¾*; 25c.

Vom Baur, C. H.—*The Rennerfelt Electric Arc Furnace.* [A paper read before the American Soc. of Electrochemical Eng., describing the use, operation and construction of the furnace. Line drawings accompany].—Iron Age May 4 1916; p 1052; pp 2*; 30c. I. Tr. Rev. May 9 1916; p 977; pp 2*; 25c.

Vom Baur, C. H.—*The Rennerfelt Electric Arc Furnace.* [A paper read before the American Electrochem. Soc. Details of its construction and operation are given].—Chem. Eng. May 1916; p 191; pp 2*; 35c.

Watts, O. P.—*An Electric Arc Furnace for the Laboratory.* [A paper read before the Electrochemical and Metallurgical Inst. Describes its detailed construction, operation and tests made on].—Met. & Chem. Engg. June 15 1916; p 681; pp 2½*; 30c.

Weber, M. C.—*Copper Cyanide Plating Solution.* [A paper read before the Lewis Institute].—Mex. Mg. Jnl. Feb. 1916; p 44; pp 1¾; 35c.

——— *Industrie Electrometallurgiche.* [General review of operations in Europe with tables of operations].—Met. (Italian) Nov. 30 1915; p 704; pp 5*; $1.

——— *Niagara Falls Power and American Industries.* [A synopsis of papers read before the American Electrochemical Soc. Steel alloys and the alloying metals are taken up].—Met. & Chem. Engg. May 1 1916; p 507; pp 6¼; 30c.

THERMIC METALLURGY

General

Addicks, L.—*Metallurgy of Copper in* 1915. [Progress in leaching, roasting, blast and reverberatory furnaces. fume condensation, etc., are taken up].—E. & M. J. Jan. 8 1916; p 90; pp 2; 25c.

Addicks, L.—*The Development of Electrolytic Copper Refining.* [A paper read before the International Engg. Cong. revealing the methods of operation for generating current, the operation of the process and the thermic metallurgy connected therewith].—Mex. Mg. Jnl. Feb. 1916; p 48; pp 2; 35c.

Anderson, R. J.—*The Metallurgical Disposal of Flotation Concentrates.* [Deals with the skimming and smelting of the concentrates].—Met. & Chem. Engg. April 1 1916; p 381; pp 2¼; 30c.

Austin, L. F.—*Washoe Reduction Works; Anaconda.* [This, the 3d part, describes the slime-flotation plant, zinc plant, copper leaching plant and acid and roasting plants in conjunction therewith].—M. & S. P. April 15 1916; p 547; pp 9*; 20c.

Bondolfi, Fausto.—*Un Capitolo di Siderurgia Applicata.* [A chapter on the application of metallurgy and metallography to iron and steel].—La Met. Italiana; Mar. 31 1916; p 165; pp 37*; $1.

Bridges, R. W.—*The Metallurgy of Canadian Cobalt Ores.* [The results of much satisfactory investigating. Nickel, arsenic, cobalt, and silver are obtained and details are given on a 3 months' test of roasting, in regard to silver losses].—Canadian Mg. Jnl. Feb. 1 1916; p 68; pp 2; 35c.

Brodie, W. M.—*Metallurgy of Native Silver Ores of Southwestern Chihuahua, Mexico.* [A paper read before the Pan-American Scientific Cong. History, smelting, concentrating, cyaniding, amalgamation, occurrence and crushing are taken up].—E. & M. J. Feb. 12 1916; p 297; pp 5*; 25c.

Browne, D. H.—*Notes on the Metallurgy of Copper.* [Current literature from several sources on operations at the larger copper mines of the world].—Canadian Mg. Inst. Bull. May 1916; p 458; pp 6½; 35c.

Burgess, G. K.; Waltenberg, R. G.—*Further Experiments on the Volatilization of Platinum.* [The results of many thermic tests are described, plotted and tabulated].—Jnl. Ind. & Engg. Chem. June 1916; p 487; pp 2¾*; 60c.

Chase, M. F.—*Advancement in the Metallurgy of Zinc.* [Brings out the conditions of the industry during the year and production figures, with a table giving the capacity of zinc smelters in the U. S.].—Mg. World Jan. 1 1916; p 15; pp 2; 10c.

Cole, F. L.—*Antimony in China.* [A description of the history of the industry, the nature and occurrence of the ores and methods of smelting the product].—M. & S. P. Mar. 11 1916; p 369; pp 5*; 20c.

Douglass, R. E.; Colley, B. T.—*Metallurgical Operations of the Braden Copper Co, Chile.* [A paper read before the Pan-American Scientific Cong. Descriptions of various operations in concentration, flotation and smelting are given].—E. & M. J. Feb 12 1916; p 315; pp 6½*; 25c

Driesen, John.—*Nachweis der Umwandlung der Reinen Kohlenstoffstähle Mittels der Thermischen Ausdehnung.* [The theory of changing and reducing carbon steels by thermic methods].—Ferrum Nov. 1915; p 27; pp 4½*; 75c.

Dupuy, E. L.; Portevin, A. M.—*La Thermo-Electricité des Aciers Spegiaux.* [Thermo-electric investigations in the steel industry].—Met. (French) Aug. 1915; p 657; pp 23*; 35c.

Feldtmann, W. R.—*The Mines of Ashanti Goldfields Corporation, West Africa.* [The history, methods of mining, geology and origination of the company are given. These arsenical ores must first be roasted and are then cyanided].—Mg. Mag. May 1916; p 257; pp 12*; 50c.

Grosvenor, W. M.—*Metallic Magnesium Industry.* [A paper read before the American Electrochemical Soc. The question of current prices and future markets are taken up with a brief on thermic methods of refining the metal].—E. & M. J. April 8 1916; p 652; pp 2; 25c.

Hartmann, M. L.—*The Chemistry and Metallurgy of Tungsten.* [Thermic methods of refining, the compounds of tungsten and methods of qualitative and quantitative analysis are given].—Pahasapa Qt'ly Feb. 1916; p 25; pp 10; 35c.

Hofman, H. O.—*The Behavior of Stibnite in an Oxidizing Roast.* [Gives the results of experimental work on the roasting of stibnite (antimony sulphide)].—A. I. M. E. Bull. Jan. 1916; p 91; pp 97*; 35c.

Ingalls, W. R.—*Metallurgy of Zinc in 1915.* [Retort discharging machines, redistillation and electrolytic refining are reviewed, with less important items].—E. & M. J. Jan. 8 1916; p 92; pp 2; 25c.

Johnson, G. E.—*Effect of Borax in Matte Fusion.* [Describes the method of investigation and gives curves and tables showing the results obtained from the investigations].—E. & M. J. April 8 1916; p 648; pp 2¼*; 25c.

Johnson, J. E., Jr.—*Burdening the Blast Furnace.* [On the control of various constituents in the charge in regard to the amount which will give good furnace operations and the kind of iron desired].—Met. & Chem. Engg. April 15 1916; p 443; pp 7¾; 30c.

Kerns, R. W.—*International Smeltery at Miami, Arizona.* [A new plant treating flotation concentrates. No roasting is needed. The method of operation is

described].—E. & M. J. Mar. 4 1916; p 421; pp 4*; 25c.

Landers, W. H.—*Quicksilver Mining in California.* [Confined to discussing the troubles encountered in smelting cinnabar. Mercury vapors permeate the furnace walls and structure].—M. & S. P. Feb. 19 1916; p 282; pp 2¾*; 20c.

Lang, Herbert. —*Quicksilver Reduction.* [The nature of the ores, methods of assay, concentration of ores, metallurgy and condensation of the metal and diseases caused from mercury are taken up]. —M. & S. P. May 13 1916; p 707; pp 8*; 20c.

Lang, Herbert.—*Uses of Furnace Slag.* [The most important of these is making cement from the slag of iron blast-furnaces].—M. & S. P. Mar. 25 1916; p 443; pp 2¾; 20c.

Liddell, D. M.—*The Metallurgist and Chemists' Handbook.* [Contains the usual handbook data on chemistry and methods for both the cyanide and other hydrometallurgical processes besides thermic metallurgy].—McGraw Hill Book Co.; book; pp 603*; $4.

Liebig, M.—*Das Ununterbrochene Zinkgewinnungsverfahren nach Roitzheim und Remy, Deutch-Land.* [Describes the method of continuous zinc smelting at Roitzheim and Remy, Germany].—Metall & Erz March 22 1916; p 143; pp 13*; 50c.

Liebig, M.—*The Roitsheim-Remy Continuous Zinc Distillation Process.* [Translated from German in Metal & Erz. A complete and detailed description is given of this process, equipment required and methods and costs of operation].—Met. & Chem. Engg. June 1 1916; p 625; pp 4½*; 30c.

Magnus, B.—*The Sintering of Flotation Concentrates.* [Deals with the operation at Mount Morgan, Queensland. Australia. The ores contained about 2% copper and 7 dwt. gold. Dwight-Lloyd sintering machines were used].—E. & M. J. June 10 1916; p 1032; pp ¾*; 25c.

Mostowitsch, W.—*Extraction of Gold and Silver from Matte by Lead.* [Abst. translation from the Jnl. of the Russian Metallurgical Soc. For the greater part the text is on the results of experimental work].—Met. & Chem. Engg. June 15 1916; p 705; pp 2¾*; 30c.

Mostowitsch, W.—*The Decomposition and Reduction of Lead Sulphate at Elevated Temperatures.* [Much data of this nature is conflicting. This paper gives the results of various thermic tests along this line].—Bull. A. I. M. E. May 1916; p 871; pp 10; 35c.

Paul, R. W.—*Electrical Pyrometry.* [A paper with particular reference to the use of the apparatus in ceramics].—Trans. Eng. Ceramic Soc. 1914-15; p 1; pp 26*; 65c.

Pomp, A.—*Einflutz der Wärmebehandlung auf die Kerbzähigkeit, Korngrötze und Härte von Kohlenstoffarmen Flusseisen.* [On the metallography, etc., of iron and the handling of the same in furnaces].—Ferrum Feb. 1916; p 65; pp 13*; 35c.

Pulsifer, H. B.—*Recovery of Zinc Oxide from Lead Blast Furnace Slag.* [From Metallurgical and Chemical Engg.].—Mg. & Engg. Rev. Jan. 5 1916; p 88; pp 1½; 35c.

Ricketts, L. D.—*Improved Mining and Metallurgy an Aid to Conservation.* [A paper read before the Pan-American Scientific Cong. reviewing the progress in mining methods, metallurgy and concentration of copper ores principally].—E. & M. J. Feb. 12 1916; p 291; pp 1½; 25c.

Ruder, W. E.—*The Brittleness of Annealed Copper.*—American Electrochem. Soc. Bull. p. 191; pp 4; 35c.

Sauveur, A.—*The Metallography and Heat Treatment of Iron and Steel.* [Written in simple, clear form with the deeper theory taken up in the last chapters].—Sauveur & Boylston, Boston; book; pp 486*; $6.

Scott, W. A.—*Milling and Smelting at Humboldt, Arizona.* [The plant of the Consolidated Arizona Smelting Co. is reviewed, including its crushing, concentration, flotation and smelting equipment and operations].—Mg. World June 17 1916; p 1133; pp 1¼*; 10c.

Shellshear, W.—*Selling Lead and Zinc Concentrates.* [Notes on selling lead-zinc ores and concentrates. Some information in regard to flotation and thermic methods as related to selling are given. All is based on Australian practice].—Mg. & Engg. Rev. May 5 1916; p 190; pp 3½*; 35c.

Siebenthal, C. E.—*The Conservation of Lead and Zinc.* [A paper read before the Pan-American Scientific Soc. It is confined to conservation in smelting and concentrating the ores].—Mg. World Feb. 19 1916; p 393; pp 2; 10c.

Smith, J. D. A.—*Pyrite Smelting.* [A general discussion of the practice rather than a description of methods to be followed].—Mg. & Engg. Rev. Feb. 5 1916; p 114; pp 2; 35c.

Spring, L. W.—*Bessemer Steel.* [A non-technical talk on historic and present-day furnaces and methods of operation, showing the development of the present convertors, furnaces, etc., from

those used as far back as 1850].—Valve World May 1916; p 166; pp 9*; 20c.

Springer, J. F.—*Primitive Iron Smelting in the Philippine Islands.* [Treats the subject in a summarized way and gives briefs on some of the historic smelters].—I. Tr. Rev. Jan. 6 1916; p 77; pp 3*; 60c.

Tamaru, S.—*The Experimental Technics of Calorimetric Measurements at High Temperatures.* [A purely theoretical treatise on the subject].—Jnl. Soc. of Chem. Indst. Jan. 31 1916; p 81; pp 7½*; 50c.

Thompson, F. C.—*The Allotropy of Iron.* [Treats on the properties and chemical composition of iron at various temperatures. The results of some tests and discussion are given].—Trans. of Faraday Soc. April 1916; p 134; pp 6½*; 60c.

Thum, E. E.—*Cost Accounting in the Construction and Operation of a Copper Smelter.* [A description of systems used by the Anaconda Copper Co., with some detailed cost figures].—Met. & Chem. Engg. May 1 1916; p 529; pp 4¾*; 30c. Met. & Chem. Engg. June 1 1916; p 660; pp 2¾; 30c.

Tupper, C. A.—*Flotation—Its Progress and Its Effects Upon Mill Design.* [A review of the development in this method during 1915, most of which is devoted to copper ores and some to lead].—Mg. World Jan. 1 1916; p 1; pp 14*; 10c.

Turner, Thomas.—*The Metallurgy of Iron.* [A revised edition treating the entire subject in as complete a way as space will allow].—Chas. Griffin & Co., Strand, Eng.; book; $5.

Weinig, A. J.—*The Liberty Bell Methods of Precipitate Refining, Colorado.* [Both acid and thermic-methods are used].—Bull. A. I. M. E. Mar. 1916; p 651; pp 12; 35c.

Wheler, A. S.—*Antimony Production in the Hunan Province, South China.* [A paper read before the Inst. of Mining & Met., London. The deposits, some cost items, methods of contracting and some information on smelting is given].—Mg. World April 8 1916; p 697; pp 2¾; 10c. E. & M. J. April 8; p 637; pp 4¼*; 25c.

Wheler, A. S.—*Antimony Production in Hunan Province, South China.* [Describes the deposits; the method of mining and smelting the ore and gives figures on the production].—Bull. Inst. of Mg. & Met., London, No. 137; pp 14*; 50c.

Yensen, T. D.—The Effect of Vacuum Fusion Upon the Magnetic Properties of Pure Open Hearth Iron.—Met. & Chem. Engg. May 15 1916; p 585; pp 2*; 30c.

Ziegel, Henry.—*Brief Course in Metallurgical Analysis.* [A book for the college laboratory rather than practical].—Chem. Pub. Co., Easton, Pa.; book; pp 72*; $1.

——— *Anaconda Works Plan and Flow Sheet, Montana.*—E. & M. J. Mar. 25 1916; p 552; pp 1½*; 25c.

——— *Analysis and Assay of Zinc Retort Residue.* [Methods used in the American Zinc Co.'s plant for determining carbon, zinc, iron, sulphur, lead, copper, silica and silver].—Met. & Chem. Engg. Feb. 15 1916; p 200; pp 1½; 30c.

——— *Die Unter der Preussischen Berg-, Hütten-, und Salinenverwaltung Stehenden Staatswerke im Jahre* 1914. [Treats on the salt, iron, coal, copper and smelting industries operated by the Prussian government].—Glückauf Feb. 19 1916; p 150; pp 4¼; 50c.

——— *International Smelting Co., Miami, Arizona.* [Analyses of products used and produced and details of equipment and operation are given, with a complete flowsheet of the plant].—M. & S. P. June 3 1916; p 822; pp 2*; 20c.

——— *Zinc Ores, Their Occurrence and Utilization.* [Descriptions of the deposits in various countries are given briefly. Prices of the ore and methods of computing its value are given, as well as costs of smelting and methods for the same].—Bull. Imperial Inst., London; p 44; pp 37; 75c.

Fuels and Combustion

Anderson, L. D.—*Mechanical Feeding as Applied to Silver-Lead Blast Furnaces.* [Reviews the operations and methods as used by the U. S. Sm. & Ref. Co., Midvale, Utah].—E. & M. J. May 29 1916; p 885; pp 3¾*; 25c.

Austin, L. S.—*The Washoe Reduction Works, Anaconda, Montana.* [The concentrator is described and in connection with the description of the smelter, coal-dust burners used are described].—M. & S. P. Feb. 5 1916; p 195; pp 8¾*; 20c.

Bigot, Alexandre.—*Distribution of the Heat in Ceramic Ovens.* [Takes up the subject in detail and describes some appliances of special use in the ovens].—Trans. Eng. Ceramic Soc. 1914-15; p 96; pp 33*; 65c.

Blum, L.—*Einfluts des Kalk-Kieselsäureverhälnisses der Schlacken auf die Betriebsergebnisse des Hochofens.* [The effects of lime silicates in slags from

smelter furnaces].—Ferrum Dec. 1915; p 33; pp 7*; 35c.

Burman, B. F.—*Coal, Coke and Limestone Efficiency in Blast Furnace Operation.* [Detailed costs, results and figuring for operations are given].—Met. & Chem. Eng. Mar. 1 1916; p 256; pp 2¾; 25c.

Chauvenet, Regis. — *Blast Furnace Smelting of Cyanide Precipitates.* [Gives details for charges and methods of computing quantities of the same for the best results].—Met. & Chem. Engg. Jan. 15 1916; p 96; pp 3½: 30c.

De Lumen, M.—*The Roasting of Blende.* [The effect of constituents of blende on sulphur elimination and roasting process. The Hasenclever, Delplace, Hegler, McDougal and Spirlet furnaces are described. Comments on the gases for sulphuric acid manufacture in England, Belgium and Germany].—E. & M. J. June 10 1916; p 1021; pp 3¾; 25c.

Diehl, A. N.—*Modern Methods of Burning Blast-Furnace Gas in Stoves and Boilers.* [A paper read before the American Iron & Steel Inst.].—I. & C. Tr. Rev. Jan. 21 1916; p 66; pp 2*; 35c.

Dunn, F. B.—*Industrial Uses of Fuel Oils.* [Describes methods employed and tests to be made for insuring efficient results. Oil fuel in the clay, cement, steel and metallurgical plants are discussed under separate chapters].—Technical Pub. Co., San Francisco; book; pp 235*; $3.

Field, A. L.—*The Available Hearth Heat of the Blast Furnace.* [Treats on theory and gives formulae for computation of the same].—Met. & Chem. Engg. April 1 1916; p 377; pp 2¾*; 30c.

Hixon, H. W.—*Electrothermic Zinc Smelting in Puebla, Mexico.* [A description of the operation of the Teziutlan Copper Co.'s plant is given. The ores run 4% copper and 10% zinc. The zinc is obtained as dust for cyanidation work].—E. & M. J. June 17 1916; p 1080; pp 1¼; 25c.

Howland, H. P.—*Calculations with Reference to the Use of Carbon in Modern American Blast Furnaces.* [A number of experiments on the same with a description of the conclusions therefrom].—Bull. A. I. M. E. Mar. 1916; p 627; pp 24; 35c.

Johnson, J. E., Jr.—*The Calculation of the Burden of the Blast Furnace.* [A complete treatise on the chemistry and computations of charges and other items which have to do with amounts and things which the blast furnace can take care of]. Met. & Chem. Engg. May 1 1916; p 520; pp 4¾; 30c.

Johnson, J. E., Jr.—*The Mechanical Principles of the Blast Furnace—II.* [A detail treatise on the mechanical construction of blast furnaces and things which effect its construction, illustrated with sectional drawings].—Met. and Chem. Engg. Jan. 15 1916; p 77; pp 10*; 30c.

Johnson, J. E., Jr.—*The Operation of the Blast Furnace.* [Treats on the question of slags from the furnace entirely].—Met. & Chem. Engg. April 1 1916; p 363; pp 9½*; 30c.

King, E. C.—*Seasoning Reverberatory Furnaces.* [A description of the methods used by the Consolidated Arizona Sm. Co., to start their new 100-ft. furnace by making it accustomed gradually to high temperatures].—E. & M. J. April 22, 1916; p 721; pp 1*; 25c.

Kloss, H.—*Geschichtliche Entwivklung der Kupolöfen und ihr Betrieb.* [On the construction and operation of cupola furnaces].—Giesserei Ztg. Jan. 15 1916; p 20; pp 5*; 35c.

Kuzell, C. R.—*Coal-Dust Firing in Reverberatory Furnaces.* [A paper read before the Pan-American Scientific Cong. Preparation of the coal, etc., with particular reference to the Anaconda plant, Montana, is described].—E. & M. J. Feb. 12 1916; p 302; pp 4*; 25c.

Rickard, T. A.—*The Selby Lead Smelter.* [Describes the equipment and operation of this plant in California in fair detail].—M. & S. P. April 8 1916; p 505; pp 5¾; 20c.

Sticht, R. C.—*Feeding Blast Furnaces in Pyritic Smelting.* [A paper read before the Australian Inst. of Mg. Eng.].—Met. & Chem. Engg. May 1 1916; p 537; pp 1¼; 30c.

Stitch, R. C.—*Smelting Copper Pyrites with Copper Ore 46% and 7.5% Sulphur.* [A presidential address before the Australian Inst. of Mining Engineers describing operations at the Mt. Lyell Mining & Railway Co.'s plant in Tasmania].—Mg. World April 8 1916; p 700; pp 3; 10c.

Vail, R. H.—*Tin Smelting at Perth Amboy, N. J.* [Bolivian concentrates are handled here and the first tin was produced on Mar. 7. The concentrates are first smelted and cast into anodes, after which they are electrolyticaly refined].—E. & M. J. May 27 1916; p 927; pp 2¾*; 25c.

Wheler, A. S.—*Antimony Smelting in Hunan Province, China.* [Gives the details of operation as followed in the metallurgical refining of the metal at the smelters].—Mg. World April 15 1916; p 739; pp 2½*; 10c.

Willard, C. G.—The Golden Reward

Roaster, South Dakota. [A brief description with details on the crushing and roasting of the ores preliminary to cyanidation. Sulphur is reduced from an average of 6% to less than 1%].—Pahasapa June 1916; p 40; 6*; 30c.

Wise, J. B.—*Braden Roasting and Sulphuric Acid Plants, Chile.* [A complete description of the plant and its operations].—Mg. World April 29 1916; p 823; pp 5¾*; 10c.

Wise. J. B.—*The Roasting and Sulphuric Acid Plants of the Braden Copper Co., Chile.* [A complete description of chemical reactions and general methods of operations. There is also a flow sheet of the acid plant].—Teniente Topics Dec. 1915; p 1; pp 8*; 35c.

——— *Die Kupolofenanlagen und der Einrichtung.* [The plans and arrangements for cupola furnaces].—Eisen Ztg. Jan. 22 1916; p 33; pp 4*; 35c.

——— *Die Pyritschmelzung und die Schwefelsäureerceugung.* [On pyrite smelting and sulphuric acid as a product therefrom].—Kali, Erz & Kohle Feb. 25 1916; p 63; pp 1¾; 35c.

——— *Lead-Smelting Data of the Herculaneum Plant, Missouri.* [One table is given showing in detail the materials smelted and products resulting and the other shows the same for materials used and produced in the smaller units of the smelter].—E. & M. J. June 3 1916; p 985; pp 1; 25c.

——— *Methods of Smelting Finely Divided Ores.* [The particles are divided so that each on entering the furnace is subjected to the reducing or oxidizing power of the furnace separately].—Mg. World April 22 1916; p 789; pp ¾*; 10c.

——— *Reverberatory Smelting at Consolidated Arizona Smelting Co., Humboldt, Arizona.* [Copper sulphides are treated and the flotation concentrates are roasted].—Met. & Chem. Engg. Jan. 1 1916; p 33; pp 1½; 30c.

——— *Roasting and Acid Making at Braden, Chile.* [Abst. from Teniente Topics, being a brief description of the Braden Copper Co.'s plant].—M. & S. P. June 3 1916; p 827; pp 1¼*; 20c.

——— *Smelting Flotation Concentrates.* [Abst. from Teniente Topics on operations of this nature by the Braden Copper Co., Chile].—M. & S. P. Feb. 12 1916; p 243; pp 1; 20c.

——— *The Braden Smelter, Chile.* [Confined to operations with some information on construction].—Teniente Topics *Nov. 1915; p 1; pp 8*;* 30c.

——— *The Double Roasting Process at East Helena, Montana.* [A detailed description of the process is given with detailed figures on the results obtained at various stages in the process. Lead-zinc ores are treated].—M. & S. P. May 6 1916; p 672; pp 4½; 20c.

——— *The King Process of Refining Copper.* [Extracts from U. S. patent. Hydrocarbon oil under pressure is introduced below the copper-bath's surface. It is shown being used in a tilting furnace].—Mg. World June 24 1916; p 1173; pp 2*; 10c.

Fume, Gas and Flue Dust

Austin, L. S.—*The New Bag House at the Midvale Smelter, Utah.* [Line drawings of the smelter, its arrangement and some of its equipment].—M. & S. P. May 20 1916; p 746; pp 2¾*; 20c.

Robie, E. H.—*Method of Determining Dust Loss, at Copper Cliff, Ontario.* [The equipment and method of procedure are described in detail].—E. & M. J. Mar. 18 1916; p 505; pp 3½*; 25c.

Samuel, J. M.—*Methods of Measuring Dust Losses at Copper Queen Works, Arizona.* [Abst. of a paper to be read before the Ariz. section of the A. I. M. E. Detailed description of methods employed for determining the losses carried as dust in the waste furnace gases].—E. & M. J. June 17 1916; p 1061; pp 2¾*; 25c.

Refractories, Walls, Linings, Etc.

Balz, G. A.—*Why Refractories Are a World Necessity.* [A general talk on elements which go to make up the refractory product, such as silica, magnesite, bauxite, chromite, graphite and other materials of less importance].—B. & C. Rec. April 18 1916; p 739; pp 3½; 35c.

Bleininger, A. V.—*Testing Clay Refractories.* [A paper read before the New Jersey Clay Workers' Ass'n. Besides the description and results of tests, methods for the classification of fire-clay shapes for industrial purposes are given].—B. & C. Rec. June 6 1916; p 1030; pp 3; 35c.

Boek, P. A.—*Insulation for High Temperatures.* [A paper read before the A. I. Mech. E. on investigations of insulating materials for furnaces].—I. Tr. Rev. May 11 1916; p 1047; pp 2½; 25c.

Cobb, John.—*Refractory Materials and Salty Coal.* [A paper read before the Coke Oven Managers' Assn. Speaks of test work showing the effect of salts contained in coal on the refractory lining of coke oven].—Coll'y-Guard, Mar. 31 1916; p 605; pp 1½; I. & C. Tr. Rev. Mar. 31; p 374; pp 1½; 35c.

Hall, Edgar.—*Chrome-Iron Ore as Lining for Reverberatory Furnaces.* [The method was tried with success in the matte furnaces of an Australian mine].—E. & M. J. Feb. 5 1916; p 267; pp 1⅝; 25c.

Johnson, J. E., Jr.—*Blast Furnace Operation.* [Talks of casting, flushing, blowing in, blowing out and banking the furnace].—Met. & Chem. Engg. May 15 1916; p 591; pp 10; 30c.

Liddell, D. M.—*Metallurgists' and Chemists' Handbook.* [Contains data, prices, production, methods of assay, analysis, cyanidation, ore-dressing, and information on fuels, refractories, design and construction, etc.].—McGraw-Hill; book; pp 603*; $4.

Mowat, J. F.—*Rigid Tests for Fire Brick and Fire Clay.* [A description of physical and heat tests for brick and clay].—B. & C. Record Jan. 4 1916; p 32; pp 4*; 30c.

Seaver, K.—*Making Silica Brick for By-Product Coke Ovens.* [A paper read before the A. I. M. E.].—B. & C. Rec. Feb. 1 1916; p 235; pp 3*; 30c.

West, John.—*Silica and Fireclay Materials.* [A paper read before the Manchester District Institution of Gas. Eng. Gives analyses of the composition of several bricks and describes the making of the same].—I. & C. Tr. Rev. June 16 1916; p 691; pp 1*; 35c.

HYDROMETALLURGY

Addicks, L.—*Metallurgy of Copper in* 1915. [Progress in leaching, roasting, blast and reverberatory furnaces, fume condensation, etc., are taken up].—E. & M. J. Jan. 8 1916; p 90; pp 2; 25c.

Austin, L. S.—*Washoe Reduction Works, Anaconda.* [This, the 3d part, describes the slime-flotation plant, zinc plant, copper leaching plant and acid and roasting plants in conjunction therewith].—M. & S. P. April 15 1916; p 547; pp 9*; 20c.

Barker, H. H.; Schlundt, H.—*Experiments on the Separation of Vanadium from Crude Sodium Uranae.* [The methods consist of using ammonium chloride in one case and in the other hydrochloric acid in connection with which leaching may be carried on].—Met. & Chem. Engg. Jan. 1 1916; p 18; pp 5½; 30c.

Bridges, R. W.—*The Metallurgy of Cobalt Silver Ores.* [Tables showing detailed results of operations and the leaching with cyanide, which operations make up the complete method].—Canadian Mg. Jnl. Mar. 15 1916; p 134*; pp 2*; 35c.

Coe, H. S.; Clevenger, G. H.—*Laboratory Method for Determining the Capacities of Slime-Settling Tanks.* [The work was started at Stanford Univ. and later continued at a Bureau of Mines laboratory and is published with permission of the U. S. Bureau of Mines].—Bull. A. I. M. E. Mar. 1916; p 597; pp 29*; 35c.

Eustis, F. A.—*Chloridising and Leaching Plant of Virginia Smelting Co., Virginia.* [Pyrite cinders high in copper are chloridized and leached and those lower in copper are given an acid leach only].—E. & M. J. May 6 1916; p 803; pp 2½*; 25c.

Liddell, D. M.—*The Metallurgist and Chemists' Handbook.* [Contains the usual handbook data on chemistry and methods for both the cyanide and other hydrometallurgical processes besides thermic metallurgy].—McGraw Hill Book Co.; book; pp 603*; $4.

Lohr, F. D.—*Oil Flotation and Copper Leaching at the Washoe Smelter.* [For the most part a description of the new leaching and flotation plants, with some discussion].—Wis. Eng. Jan. 1916; p 166; pp 6; 35c.

Motherwell, A. B.—*Electrolytic Zinc.* [The Bradley-Williams process is described. Here an acidified solution of zinc sulphate takes the zinc into solution from the ores and the zinc precipitated from it by electrolytic methods].—M. & S. P. Mar. 18 1916; p 401; pp 2⅛*; 20c.

Orem, A. J.—*Changes at the Nevada-Douglas Leaching Plant, Nevada.* [An explanation of why it was necessary to crush the copper ores to 60 instead of 20 mesh].—Mg. World Mar. 25 1916; p 609; pp 1¾*; 10c.

Parsons, C. L.; Moore, R. B.; Lind, S. C.; Schaefer, O. C.—*Extraction and Recovery of Radium, Uranium and Vanadium from Carnotite.* [Abst. of a U. S. Bureau of Mines paper on an acid leaching method].—Jnl. of Indt. & Chem. Engg. Jan. 1916; p 48; pp 5*; 60c.

Ricketts, L. D.—*Improved Mining and Metallurgy an Aid to Conservation.* [A paper read before the Pan-American Scientific Cong. reviewing the progress in mining methods, metallurgy and concentration of copper ores principally].—E. & M. J. Feb. 12 1916; p 291; pp 1½; 25c.

Rose, C. A.—*Metallurgical Operations of the Chile Exploration Co.* [A paper read before the Pan-American Scientific Cong. A complete description, with drawings of their crushing and leaching plans].—E. & M. J. Feb. 12 1916; p 321; pp 5½*; 25c.

Storey, O. W.—*Review* of Recent Prog-

ress in Electrolytic Iron. [A paper read before the American Electrochemical Soc. Gives synopsis of several methods and detailed figures on the cost of construction and operation of a plant and production of the electrolytic iron].—Met. & Chem. Engg. May 1 1916; p 534; pp 3; 30c.

Vail, R. H.—*Tin Smelting at Perth Amboy, N. J.* [Bolivian concentrates are handled here and the first tin was produced on Mar. 7. The concentrates are first smelted and cast into anodes, after which they are electrolytically refined].—E. & M. J. May 27 1916; p 927; pp 2¾*; 25c.

Van Orden, R. W.—*Mountain King Mining Co. Power Plant, California.* [A complete description of the plant, its operation and drawings, to show its construction].—Elect. Power & Gas. Feb. 12 1916; p 125; pp 8*; 35c.

Vogelstein, L.—*Buying and Selling Nonferrous Metals of South America.* [A paper read before the Pan-American Scientific Cong. Besides buying, selling and transportation it speaks of the incapacity of U. S. smelters driving the trade to England].—E. & M. J. Feb. 12 1916; p 292; pp 4½; 25c.

Yeatman, Pope.—*Mine of Chile Exploration Co., Chuquicamata, Chile.* [A paper read before the Pan-American Scientific Cong. History, geology, ore reserves, leaching and the electric power plant are all taken up in fair detail].—E. & M. J. Feb. 12 1916; p 307; pp 8*; 25c.

——— *Hydrometallurgy of Zinc and Lead in* 1915. [A contribution from the Met. Research Department, Univ. of Utah, giving a resume of operations and advances in this process during the year].—Met. & Chem. Engg. Jan. 1 1916; p 30; pp 2¾; 30c.

——— *Leaching Copper at the New Cornelia, Arizona.* [Abst. from the general managers report on results obtained, future work to be done and work which has been accomplished].—M. & S. P. April 8 1916; p 522; pp 1; 20c.

——— *Mill and Smelter Construction in* 1915. [Editorial review on the progress in lead, zinc, copper, silver and gold smelters, mills and hydrometallurgical plants].—Mg. World Jan. 1 1916; p 17; pp 15*; 10c.

——— *Pan-American Congress, Proceedings of the Second Meeting.* [Abstracts of the more important papers read].—Mg. World Jan. 8 1916; p 63; pp 7; 10c.

METALLURGY GENERAL

Anderson, R. P.; Biederman, W.—*Reagents for Use in Gas Analysis.* [The article consists of 2 parts. The first treats on analysis with pipettes and solution, while the second speaks of using phosphorus in solution, rather than the solid form, for absorbing oxygen].—Jnl. of Indst. & Engg. Chem. Feb. 1916; p 131; pp 4½*: 60c.

Bell, R. N.—*Mining in Idaho.* [Reviews operations of the principal mines and smelters in the state].—E. & M. J. Jan. 22 1916; p 177; pp 3; 25c.

Coghill, W. H.—*Research Problems.* [Speaks of his experience in encountering metallurgical problems and describes the way in which he solved them].—M. & S. P. Jan. 29 1916; p 159; pp 2; 20c.

Fahrenwald, F. A.—*A Development of Practical Substitutes for Platinum and Its Alloys with Special Reference to the Alloys of Molybdenum and Tungsten.* [Details are given regarding the making of the alloys and their properties, including a metallographic description].—A. I. M. E. Bull. Jan. 1916; p 103; pp 47*; 35c.

Fulton, C. H.—*The Sampling, Buying and Selling of Ores.* [Abst. from a U. S. Bureau of Mines Tech. Paper].—Mex. Mg. Jnl. Mar. 1916; p 77; pp 2½; 35c.

Hall, Edgar.—*Chrome-Iron Ore as Lining for Reverberatory Furnaces.* [The method was tried with success in the matt furnaces of an Australian mine].—E. & M. J. Feb. 5 1916; p 267; pp 1¾; 25c.

Hall, W. T.—*The Determination of Antimony in the Products Obtained by Roasting Stibnite.* [Roasting antimony sulphide will produce a trisulphide, trioxide, tetroxide and some unoxidized antimony. The article gives a method for analysis of this combination].—A. I. M. E. Bull. Jan. 1916; p 99; pp 3*; 35c.

Hofman, H. O.—*Metallurgy of Lead in* 1915. [Abstracts from important articles which appeared during the year on metallurgical practice].—E. & M. J. Jan. 8 1916; p 89; pp 2; 25c.

Hofman, H. O.—*Recent Progress in the Metallurgy of Copper.*—Jnl. Frank. Inst. Jan. 1916; p 83; pp 16*; 60c.

Kreisinger, Henry; Ovitz, F. K.—*Sampling and Analyzing Flue Gases.* [Complete details of methods and apparatus are given for analyzing gases for their components].—U. S. Bur. of Mines Bull. 97; pp 70*.

Krone, O. A.—*A New Accurate Method of Gas Analysis.* [Contains the general method of absorption].—Jnl. Ind. &

Eng. Chem. Mar. 11 1916; p 231; pp 5¾*; 60c.

Jacobs, E.—*Metallurgical Improvements in British Columbia.* [Speaks of the advances made by several companies operating there].—Canadian Mg. Jnl. May 15 1916; p 252; pp 1½; 35c.

Liddell, D. M.—*Metallurgists' and Chemists' Handhook.* [Contains data, prices, production, methods of assay, analysis, cyanidation, ore-dressing, and information on fuels, refractories, design and construction, etc.].—McGraw-Hill; book; pp 603*; $4.

MacKenzie, Geo. C.—*Ore Dressing and Metallurgical Laboratories of the Canadian Department of Mines.* [A description of their equipment and operations, published by permission of the Director of Mines].—Canadian Mg. Inst. Bull. Jan. 1916; p 40; pp 7½*; 35c.

Perkins, F. C.—*British Columbia Mining Hydro-Electric Plants.* [Detailed information of a general nature is given on several plants, principal among which is the Falls Creek plant of the Granby Con. Co.].—Mg. World May 6 1916; p 865; pp 4¼*; 10c.

Ricketts, L. D.—*Improved Mining and Metallurgy an Aid to Conservation.* [A paper read before the second Pan-American Scientific Congress pointing out the waste allowed by our present day methods].—Mg. World April 22 1916; p 778; pp 1½; 10c.

Rickard, T. A.—*Philip Argall and Metallurgical Progress.* [A review of Mr. Argall's life in the mining field, including experience with gold, tin, copper, etc.].—M. & S. P. Jan. 22 1916; p 119; pp 12*; 20c.

Ritter, E. A.—*Recent Milling Practice in San Juan County, Colorado.* [Gold and silver ores with base metals are found. Brief descriptions of most of the important milling plants are given and one flotation plant is described].—Mg. World Jan. 15 1916; p 111; pp 6½*; 10c.

Schiefer, H. V.—*Sintering Plant Installed at Toledo.* [Describes a complete plant for unloading, storing, preparing and sintering direct and stock pile flue dust].—I. Tr. Rev. May 25 1916; p 1155; pp 6½*; 25c.

Seaver, K.—*Making Silica Brick for By-Product Coke Ovens.* [A paper read before the A. I. M. E.].—B. & C. Rec. Feb. 15 1916; p 341; pp 2½; 70c.

Seaman, H. W.—*Wyoming's Immense Fuel Resources Assure Metallurgical Center.* [Talks of the recently opened natural gas and petroleum wells in that state].—Mg. World Mar. 4 1916; p 467; pp 5¼*; 10c.

Siebenthal, C. E.—*Lead in* 1914. [Production and operation in general and by states for both mines and smelters of U. S. and some foreign countries].—Min. Res. of U. S. I:22; pp 29.

Smith, W. J.—*Angles, Elbows and Lay-Out Construction by New Method.* [A unique method for the making of curves, etc., in any kind of pipe or flume lines in the mine, mill or smelter].—Mg. World Jan. 29 1916; p 191; pp 3¼*; 10c.

Stansfield, Alfred.—*Electric Furnaces as Applied to Non-Ferrous Metallurgy.* [A paper read before the Institute of Metals on the use of the furnace for refining aluminum, magnesium, zinc, sodium, potassium, calcium, barium, strontium and cerium].—Mg. Jnl. April 8 1916; p 233; pp 2; 35c.

Wagner, F. H.—*The Cleaning of Blast Furnace Gases.* [Describes wet and dry methods of precipitating dust taken up with the gases on account of the blast].—McGraw-Hill; book; pp 168*; $2.

Worden, H. B.—*Redwood Stave Pipe for Mining and Power Use.* [For hydraulic giants and other placer equipment, hydroelectric plants, and direct hydraulic power].—Mg. World Jan. 29 1916; p 195; pp 3¼*; 10c.

Zalinski, E. R.—*Mining in Utah in* 1915. [Details on production and activities in gold, silver, zinc, copper and smelting industries].—E. & M. J. Jan. 15 1916; p 138; pp 2½; 25c.

Ziegel, H.—*Brief Course in Metallurgical Analysis.* [Alternate pages are ruled for tabulating results of analysis. The book is intended for students who have had some previous analytical study].—Chem. Pub. Co., Easton, Pa.; book; pp 72*; $1.

——— *Advances in the Bolivian Tin Smelting Industry.* [Shows advances made towards smelting the concentrates in the Americas rather than Europe].—Mg. World Feb. 12 1916; p 254; pp ¾; 10c.

——— *Industrie Electrometallurgiche* [General review of operations in Europe with tables of operations].—Met. (Italian) Nov. 30 1915; p 704; pp 5*; $1.

——— *Mill and Smelter Construction in* 1915. [Editorial review on the progress in lead, zinc, copper, silver and gold smelters, mills and hydrometallurgical plants].—Mg. World Jan. 1 1916; p 17; pp 15*; 10c.

——— *Tin Smelting Now an American Industry.* [Editorial on the subject].—Mg. World Jan. 15 1916; p 126; pp 1; 10c.

POWER AND MACHINERY.*

CHAPTER XIX.

ELECTRICITY

In Mines

Anslow, Frank.—*Types of Modern Electric Winding.* [A paper read before the Assn. of Mining Elect. Eng. containing diagram drawings].—I. & C. Tr. Rev. Mar. 31 1916; p 368; pp 3*; 35c.

Armstrong, F. H.—*An Electro-Hydraulic Shovel.* [In operation in the iron mines of northern Michigan and operated by electric power with certain hydraulic features. It is similar to the steam shovel in common use there].—A. I. M. E. Bull. Feb. 1916; p 203; pp 7*; 35c.

Bailey, P. S.—*Arc and Incandescent Headlights.*—Coal Age April 29 1916; p 753; p 4; pp 1¼*; 20c.

Bailey, P. S.—*Types of Arc and Incandescent Lights for Mine Locomotives.* [Many types of lights are shown and the advantages and correct uses of each dwelt on].—Mg. World May 13 1916; p 911; pp 3¼; 10c.

Bulkley, Norman.—*Application of Electric Power to Mining Work in the Witwatersrand Area, South Africa.* [A complete description of the use of electricity for crushing, milling, air compressing, hoisting, etc. A comparison is made between the steam and electric power costs, and charts and drawings of arrangements are given].—A. I. M. E. Bull. Feb. 1916; p 355; pp 19*; 35c.

Bulkley, J. N.—*Application of Electric Power to Rand Mining Work.* [A paper read before the A. I. M. E. Air compressors and pumps are dealt with in particular].—S. Afr. Mg. Jnl. Mar. 25 1916; p 694; pp 1; April 1; p 13; pp 1; April 29 1916; pp 112; p 1; $1.05.

Burch, H. K.; Whiting, M. A.—*Automatic Operation of Mine Hoists as Exemplified by the New Electric Hoists for the Inspiration Consolidated Copper Co., Arizona.* [A complete description of the plant and peculiarities noted].—Bull. A. I. M. E. Mar. 1916; p 583; pp 14*; 35c. Coll'y Guard. April 20 1916; p 751; pp 1½*; 35c.

Burns, D.—*Electric Winding.* [A paper read before the Assn. of Mining Electrical Engineers, England. Theories for making computations in this class of work are given].—I. & C. Tr. Rev. Feb. 25 1916; p 205; pp 2*; 35c.

Carnahan, T. S.—*Underground Mining Method of the Utah Copper Co.* (A paper read before the A. I. M. E. Methods of haulage, drilling, stoping and mining costs are given].—E. & M. J. Jan. 29 1916; p 216; pp 4¼*; 25c.

Clark, H. H.; Breth, N. V.; Means, C. M.—*Shot Firing in Coal Mines by Electricity Controlled from Outside.* [Describes 9 different systems separately, besides general discussion on the subject].—U. S. Bur. of Mines Tech. Paper 108; pp 36.

DeWolf, E. C.—*Goodman Storage Bat-Battery Locomotives.* [A discussion on the use, operation and construction of this type of locomotive for underground haulage].—C. Tr. Bull. Jan. 15, 1916; p 43; pp 4*; 25c.

Dunlap, R. R.—*The Use of Storage Battery Locomotives in Mines.* [Has tables, diagrams to show construction and other information, besides discussion regarding the use of this type].—C. Tr. Bull. Feb. 15 1916; p 43; pp 6¾*; 25c.

Fay, A. H.—*Coal Mine Fatalities in the United States,* 1915. [Besides tables and description regarding accidents lists are given of permissible explosives, electric lamps and motors, tested prior to Jan. 1, 1916].—U. S. Bur. of Mines; pp 80*; 20c.

Fay, A. H.—*Coal Mine Fatalities in the United States in March,* 1916. [A list of permissible explosives, lamps and motors tested prior to May 1, 1916, is also given].—U. S. Bur. of Mines Monthly Statement; pp 22.

Foley, F. J.—*Storage-Battery Locomotive in a Coal Mine.* [Describes the motor and compares it with mule-haulage].—Coal Age April 1 1916; p 587; pp 2¾*; 20c.

Hallett, R. L.—*Analysis of Fuel Gas.* [Use is made of the electrical explosion pipette].—E. & M. J. April 29 1916; p 779; pp 1¾*; 25c.

*Note.—For drills, pumps, fans, haulage and winding engines, dredges, excavators, crushers, separators, conveyors, transportation, machinery, etc., see respectively "Drilling and Boring," "Pumping," "Ventilation" and other appropriate headings in "Mine and Mining," "Mill and Milling," and "Miscellaneous."

Keifer, H. N.—*Electricity in the Mining Industry—Mining Telephone Equipment.* [Describes the operation of a system in detail, including the various apparatus used and different methods of installation possible].—Mg. Engg. & Elect. Rec. Feb. 1916; p 5; pp 4¾*; 35c.

Moeller, Franklin.—*The New Electric Hoist of the North Butte Mining Co., Montana.* [Methods used in calculating the equipment and a description of the equipment are all given].—A. I. M. E. Bull. Feb. 1916; p 343; pp 12*; 35c.

Nordberg, G. E.—*Hoist for Elm Orlu Mining Co., Montana.* [The clutches are engine operated and the hoist is equipped with many new safety devices].—E. & M. J. Feb. 5 1916; p 256; pp 1½; 25c.

Read, R. G.—*A Plant for Thin-Seam Coal.* [Electric power is used and their methods of drilling, hauling and handling are taken up briefly].—Coal Age May 13 1916; p 830; pp 2*; 20c.

Reed, J. W.—*Methods of Mining and Preparation of Coals for Market in Inspection District No.* 3. Mining methods, ventilation, mining machines, blasting, haulage and electricity are the principal subjects considered].—Ky. Dept. of Mines 1915; Annual Report III; pp 108*.

Taylor, W. G.—*Motor Equipments for the Recovery of Petroleum.* [A detailed description of methods and practical results obtained by using the slip-ring motor for drilling, pumping, etc. Data covering horsepower required and kilowatt consumption is given].—Proc. Amr. Inst. Elect. Eng. June 1916; p 759; pp 14*; 35c.

Thomas, T. J.—*Firedamp Detectors for Miners' Safety Lamps.* [A number of tests made by use of platinum wire and electricity. The results are given].—Coll'y Guard. April 28 1916; p 799; pp 1½*; 35c.

Valiquet, H. H.—*Important Features in Mine-Ventilating Fans.* [Methods for figuring new systems and for determining new additions to installed systems].—Coal Age Jan. 15 1916; p 123; pp 2*; 20c.

Warren, H. M.; Biesecker, A. S.; Powell, E. J.—*Tests on Various Electric Motor-Driven Equipment Used in the Preparation of Coal.* [A number of tests are given with curves and reproductions of recording charts obtained from operations, principally from the tipple].—A. I. M. E. Bull. Feb. 1916; p 181; pp 13*; 35c.

Whiting, M. A.; Burch, H. K.—*Automatic Operation of Electric Mine Hoists at the Inspiration Mine, Arizona.* [A paper read before the A. I. M. E.; deals with the theoretical practice involved there].—Mg. World Mar. 11 1916; p 115; pp 2*; April 1 1916; p 649; pp 3¾*; 20c.

Wolf, W.—*Neuere Leonardschaltungen in Bergwerken.* [Describes a new installation of electric hoists with safety and signaling equipment].—Kali Jan. 1 1916; p 4; pp 7½*; 35c.

Yates, B. C.—*New Construction Work at the Homestake, South Dakota.* [A brief but detailed description of the new steam auxiliary electric station and skip hoist. The central steam plant, electric generating plant and hoist are included].—Pahasapa June 1916; p 31; pp 4; 30c.

Young, C. M.—*Underwood—A Modern Colliery, Pennsylvania.* [Describes the shaft arrangements and power, which is both steam and electricity, besides their operation of preparing the coal for market].—Coal Age Jan. 1 1916; p 4; pp 7¼*; 20c.

Yeatman, Pope.—*Mine of Chile Exploration Co., Chuquicamata, Chile.* [A paper read before the Pan-American Scientific Cong. History, geology, ore reserves, leaching and the electric power plant are all taken up in fair detail].—E. & M. J. Feb. 12 1916; p 307; pp 8*; 25c.

——— *Battering Signaling Bells.* [A paper read before the Assn. of Mining and Electrical Eng.].—I. & C. Tr. Rev. Jan. 7 1916; p 2; pp 1; Jan. 14 1916; p 36; pp 1*; 70c.

——— *Cost of Upkeep of Electric Safety Cap Lamps.* [Gives details of cost for a plant handling 250 lamps per day].—Coal Age Mar. 11 1916; p 453; pp 1½*; 20c.

——— *Direct Current of* 250 *Volts Used Underground at the Copper Queen, Arizona.* [Gives details on the construction of the lines which are used for haulage and relates to five accidents which have resulted from this source].—Mg. World Jan. 15 1916; p 116; pp 1; 10c.

——— *Ford Collieries Co., New No.* 3 *Mine, Pennsylvania.* [After a general description of the surface equipment and power plant methods of cutting and haulage are taken up].—Elect. Mg. April 1916; p 33; pp 18*; 20c.

——— *Stripping the Hillcrest Mine with a Sand Pump in Minnesota.* [Centrifugal sand and water pumps were used with electric power. The area stripped was 1000 by 200 ft. and 65 ft. deep].—E. & M. J. Jan. 29 1916; p 211; pp 4¼*; 25c.

——— *The New Man Hoist at the Inspiration Con. Copper Co., Arizona.* [The hoist has a double-decked cage and is something similar to the elevators of big buildings].—Mg. World Mar. 18 1916; p 561; pp 1¾*; 10c.

In Mills

Cole, David.—*The Electrical Theory of Flotation.* [His observations were made with copper sulphide ores of Butte, Montana].—M. & S. P. Jan. 15 1916; p 79; pp 2; 20c.

Cottrell, F. G.—*Recent Progress in Electrical Smoke Precipitation.* [A paper read at the Pan-American Scientific Soc. A historical review of experiments and results in endeavoring to precipitate fine solids carried in gases].—E. & M. J. Feb. 26 1916; p 385; pp 8*; 25c.

Fahrenwald, F. A.—*The Electro-Statics of Flotation.* [Concentration by the development of positive and negative electricity in the different parts of the ore].—M. & S. P. Mar. 11 1916; p 375; pp 4*; 20c.

McKnight, W. M.—*Some Faults of the Small Electric-Arc Furnace for Melting and Refining Steel.* [A paper read before the Am. Chem. Soc.]—Mg. World May 20 1916; p 955; pp 1½; 10c.

Ralston, O. C.—*The Control of Ore Slimes.* [The electricity originating in the slimes is taken up and details given regarding its effects and nature. The same is given regarding other substances either originally present in the slimes or being originated therein].—E. & M. J. June 3 1916; p 990; pp 4¼; 25c.

Rickard, T. A.—*The Flotation Process.* [A compilation of articles from different sources which appeared during 1915 in the M. & S. P. Electrostatic theories and methods are described with pneumatic and other methods. Methods of testing ores are also given in some papers].—M. & S. P.; book; pp 364*; $2.

Robbins, H. E.—*Conductivity Cell for Electro-Titration.* [A description and drawing of the same].—Amr. Jnl. of Sci. Mar. 1916; p 249; pp 2*; 60c.

Rosenblatt, G. B.—*Direct Drive for Flotation Machines.* [The motive power for each flotation cell is made by a separate direct connected electric motor].—Mg. World May 20 1916; p 957; pp 1½*; 10c.

Stander, H. J.—*Interfacial Tension in Flotation.* [On the action of oils and acids, based on electrostatic phenomena and interfacial tension].—E. & M. J. Mar. 25 1916; p 576; pp 3; 25c.

Yeatman, Pope.—*Mine of Chile Exploration Co., Chuquicamata, Chile.* [A paper read before the Pan-American Scientific Cong. History, geology, ore reserves, leaching and the electric power plant are all taken up in fair detail].—*E. & M. J. Feb. 12 1916;* p 307; pp 8*; 25c.

——— *Bethlehem's New Electric Steel Plant.* [The Girod furnace is used. Hot metal will be refined and both high carbon and alloy steels produced].—Iron Age May 18 1916; p 1194; pp 1¾*; 30c.

——— *Electricity in By-Product Coke Manufacture.* [A description of the making of illuminating gas and methods of utilizing waste gas for generating electricity to be used in by-product coking].—Elect. Rev. & West. Elect. April 1 1916; p 583; pp 3*; 25c.

——— *Mining in the Philippine Islands.* [Gold mining and dredging are carried on. The new Benguet mill, which will use the sliming cyanide process and be operated by electricity, is described].—Mex. Mg. Jnl. Jan. 1916; p 13; pp 1½; 35c.

——— *Potash Recovery and the Cottrell Process.* [An electrical precipitation process in this article described in use at cement plants for precipitating and saving potash from dust precipitated].—Mg. & Oil Bull. Mar. 1916; p 77; pp 3½*; 25c.

Hydroelectric

Addicks, Lawrence. — *Electrochemical Industries and Their Interest in the Development of Water Powers.* [A general talk on the relation of hydroelectric power to the electrochemical industry].—Bull. A. I. M. E. May 1916; p 533; pp 8; 35c.

Allison, L. R. W.—*An Interesting Mines Power System.* [Describes the installation of the Arkansas Valley Light & Power Co., in conjunction with whose electric power near Puebla, Colo., steam plants are used and mining cost reduced].—Pract. Eng. April 1 1916; p 331; pp 1*; 20c.

Beals, E. A.—*Report on Columbia River Power Project.* [Abst. from a U. S. Bureau of Weather Report].—Jnl. of Elect. Power & Gas Jan. 1 1916; p 9; pp 2½; 35c.

Beckman, J. W.—*Pacific Coast Electrochemical Possibilities Compared with Norway and Sweden.* [Abst. of a paper read before the American Chemical Soc. Power and labor costs, with other figures, are given].—Jnl. of Elect. Power & Gas Feb. 26 1916; p 163; pp 4*; 35c. Mg. & Oil Bull. April 1916; p 101; pp 6¾*; 25c.

Bennett, R.—*Out of Door Hydroelectric Plants.* [A paper read before the Amer. Inst. of Elect. Eng.].—Jnl. of Elect. Power & Gas June 24 1916; p 488; pp 3; 35c.

Conway, G. R. G.—*British Columbia Hydroelectric Developments.* [A brief description of Britsh water power plants

abstracted from a Canadian Department of Interior report].—Jnl. of Elect. Power & Gas Jan. 1 1916; p 1; pp 8½*; 35c.

Dunn, Gano.—*The Water Power Situation, Including Its Fnancial Aspect.* [Points out facts which give the financial man the aspects he retains toward hydro-electric installations].—Bull. A. I. M. E. May 1916; p 575; pp 16; 35c.

Dutcher, H. K.—*City of Kamloops Hydro-Electric Plant.* [A paper read before the Canadian Soc. of Civil Eng. Gives details on the plant's construction and equipment].—Canadian Eng. June 15 1916; p 639; pp 3½*; 35c.

Harisberger, John.—*Pacific Coast Hydroelectric Development.* [Abst. from a paper read before the National Elect. Light Assn. A general discussion of several companies operating is given. A table showing many of the plants and details regarding them is given also].—Jnl. Elect. Power & Gas May 27 1916; p 403; pp 8½*; 35c.

Harza, L. F.—*Report on the Columbia River Power Project.* [Is accompanied with curve illustrations].—Jnl. of Elect. Power & Gas Jan. 8 1916; p 33; pp 4¼*; Jan. 15; p 54; pp 2; Jan. 22 1916; p 67; pp 2¾*; Jan. 29 1916; p 90; pp 3¾*; Feb. 5 1916; p 112; pp 3*; Feb. 12 1916; p 135; pp 2½*; Feb. 19 1916; p 151; pp 3*; Feb. 26; p 169; pp 3¼*; Mar. 4; p 187; pp 3; Mar. 11 1916; p 210; pp 2¾; Mar. 18; p 225; pp 2; $3.85.

Kalenborn, A. S.—*Merced Falls Low Head Hydroelectric Plant.* [A description of its construction and operation].—Jnl. of Elect., Power & Gas June 10 1916; p 445; pp 3¾*; 35c.

Lewis, J. H.—*Utilization of Oregon's Latent Waterpowers.* [Abstracted from "Oregon's Opportunity in Industrial Preparedness"].—Jnl. of Elect. Power & Gas April 8 1916; p 275; pp 5*; 35c.

Lyon, D. A.; Keeney, R. M.—*Feasibility of Western Electric Metallurgy.* [Discusses the pig iron, steel, copper and zinc smelting in electric furnaces and gives costs on the same. It is concluded with a talk on the hydro-electric power question].—Jnl. Elect. Power & Gas April 29 1916; p 331; pp 3¾*; 35c.

Murphy, R. E.—*Tapping a Lake for Hydro-Electric Power in Alaska.* [A tunnel was run to connect underneath the lake by the Alaska Gastineau Co., and thus furnish a water-head for power].—Mg. World April 22 1916; p 778; pp 1; 10c.

Perkins, F. C.—*British Columbia Mining Hydro-Electric Plants.* [Detailed information of a general nature is given on several plants, principal among which is the Falls Creek plant of the Granby Con. Co.].—Mg. World May 6 1916; p 865; pp 4¼*; 10c.

Rogers, R. W.—*Water Powers in the Porcupine Area of Northern Ontario.* [Abst. from an Ontario Bureau of Mines' report].—Canadian Eng. Feb. 17 1916; p 251; pp 2*; 35c.

Worden, H. B.—*Redwood Stave Pipe for Mining and Power Use.* [For hydraulic giants and other placer equipment, hydroelectric plants, and direct hydraulic power].—Mg. World Jan. 29 1916; p 195; pp 3¼*; 10c.

——— *A Western States Water Power Conference.* [A meeting of state officials from the different states to discuss the question of using our water power].—C. C. Chapman, Portland, Ore.; book; pp 279.

——— *American Institute of Electrical Engineers.* [Considerable discussion was had on the water power and hydro-electric problem of this country].—Met. & Chem. Engg. May 1 1916; p 469; pp 4*; 30c.

——— *British Columbia Hydroelectric Developments.* [A brief review of the equipment at the more important plants with other briefs of information].—Jnl. of Elect. Power & Gas Jan. 8 1916; p 25; pp 5½*; 35c.

——— *Electric Power in Southern Mines.* [Deals with hydroelectric installations at the iron mines surrounding Birmingham, Ala.].—I. Tr. Rev. June 29 1916; p 1413; pp 2*; 25c.

——— *New York and Honduras Rosario Mining Co., Central America.* [Abst. from the company's report describing the mill and power plant on the property].—Mex. Mg. Jnl. Feb. 1916; p 53; pp 4¼*; 35c.

——— *Niagara Falls Power and American Industries.* [A synopsis of papers read before the American Electrochemical Soc. Steel alloys and the alloying metals are taken up].—Met. & Chem. Engg. May 1 1916; p 507; pp 6¼; 30c.

——— *Some of the New Things in Mining in* 1915. [Editorial review of installations, such as air lifts, hoists, compressed air locomotive, hydroelectric plants, cableway for reclaiming tailings, etc.].—Mg. World Jan. 1 1916; p 41; pp 5½*; 10c.

——— *The Slump in Hydroelectric Construction.*—Jnl. of Elect. Power & Gas Feb. 5 1916; p 109; pp 1½; 35c.

General

Burgess, C. F.; Cravens, G. W.—*Applied Electrochemistry and Welding.* [Two separate books bound into one volume. Electric welding is given considerable consideration, although other methods are described]. — American Tech. Soc., Chicago; book; pp 215*; $1.50.

Clark, H. H.; Breth, N. V.; Means, C. M.—*Shot Firing in Coal Mines by Electricity Controlled from Outside.* [Four systems are described in some detail and costs for the same given].—C. Tr. Bull. May 1 1916; p 53; pp 4; 25c.

Croft, Terrell.—*Rigid Conduit Wiring Hints.* [Contains many drawings and description on the correct methods of installing and using conduits for electric wires].—Pract. Eng. June 15 1916; p 531; pp 3*; 20c.

Dewolf, E. C.—*The Goodman Storage Battery Locomotives — Particularly the Articulated Type.* [A description of the construction and uses of this type].—Mg. World Jan. 29 1916; p 293; pp 3¾*; 10c.

Elliot, H.—*Electrical Plant at Frickley Colliery, England.* [A paper read before the Assn. of Electrical Mining Eng.].—I. & C. Tr. Rev. Mar. 24 1916; p 336; pp 2½; 35c.

Field, E. B.—*The Little Brass Check in the Crow's Nest, Pennsylvania.* [Describes a system using brass checks for accounting for the number of cars a miner has taken out. They use purchased electric power].—Coal Age Mar. 18 1916; p 488; pp 2¼*; 20c.

Hatch, J. N.—*Power Station Buildings.* [Features for planning central electrical power plants. The subject is treated on in a broad way].—Jnl. West. Soc. Eng. Mar. 1916; p 266; pp 22*; 60c.

Hay, T. R.—*How to Select Industrial Motors.* [Speaks of the correct type of motors for various classes of work].—Engg. Mag. June 1916; p 344; pp 11*; 35c.

Hays, J. W.—*Semi-Technical Studies in Physical Science.* [By description and tabulated data the costs of power for steam, gas and oil engine, electric power plants varying from 20 to 500 kw., are compared. Costs for power in a 100-kw. plant with natural gas, illuminating gas and gasoline engines are also given].—Steam June 1916; p 157; pp 3¼; 35c.

Megson, J. E.; Jones, H. S.—*The Diesel Engine in Practice.* [Costs of operating and descriptions of construction are given, including engines direct connected and otherwise with electric generators.—*Jnl. Elect., Power & Gas* Feb. 19 1916; p 148; pp 3*; Feb. 26; p 173; pp 2*; Mar. 4; p 190; pp 2; $1.05.

Moeller, F.—*The Calculation of Flywheel Motor-Generator Sets.* [A paper read before the A. I. M. E. describing the recent installation at the North Butte mine].—Coll'y-Guard. Mar. 31 1916; p 601; pp 2*; 35c.

Morgan, J. D.—*Notes on the Ignition of Explosive Gas Mixtures by Electric Sparks.* [A paper read before the Inst. of Elect. Eng.].—Coll'y Guard. Jan. 14 1916; p 66; pp 2*; 35c.

Paul, R. W.—*Electrical Pyrometry.* [A paper with particular reference to the use of the apparatus in ceramics].—Trans. Eng. Ceramic Soc. 1914-15; p 1; pp 26*; 65c.

Phillips, H. M.—*Induction Motor Characteristics.* [Reprint from Power. Discusses the speed limitations, starting current, torque of squirrel cage motors and the advantages of wound motor type for certain work].—Coal Age June 3 1916; p 969; pp 2½; 20c.

Steinmetz, C. P.—*Theoretical Elements of Electrical Engineering.* [This is the fourth edition and is divided into part I on theory and part II on special apparatus].—McGraw Hill Co.; book; pp 368*; $3.

Yensen, T. D.—*Magnetic and Other Properties of Iron-Silicon Alloys, Melted in Vacuo.* [The alloys are of particular use in electrical work. The investigations are to determine their conductivity and metallographic structure].—Univ. of Ill. Bull. XIII; No. 12; pp 67*.

Yensen, T. D.—*Vacuum-Fused Iron with Special Reference to Effect of Silicon.* [The iron-silicon alloy is of particular use in electricity. Results of investigations herein are on the electrical and mechanical properties and metallographic changes produced].—A. I. M. E. Bull. Feb. 1916; p 483; pp 30*; 35c.

——— *Central Station Power Applied to Southern Clay Plants.* [An article from the Electrical Rev. on the costs and uses of electrical power in brick plants in southwestern U. S.; also describing their methods of manufacture].—B. & C. Rec. Feb. 15 1916; p 331; pp 4*; 35c.

——— *Electric Dragline Work on the Boise Project, United States Reclamation Service, Idaho.*—Excavating Eng. April 1916; p 251; pp 4¼*; 20c.

——— *Electric Power for Public Work as Brought Out at the Wilson Ave. Tunnel, Chicago.* [A complete description of electric power used in the tunnel is given. Electricity is here used for hoist-

ing, air compression, rock crushing, haulage, ventilation and lining the tunnel with concrete].—Elect. Rev. & West. Elec. June 3 1916; p 1017; pp 6¼*; 20c.

——— *"Mechanical World" Electrical Pocket Book.* [Information on theoretical and practical electricity, with some tables included].—Emmett & Co., London; book; pp 298*; 40c.

COMPRESSED AIR

Beckett, P. G.—*Air Lifts at Old Dominion Mine, Arizona.* [Abst. from a paper in the Bull. of A. I. M. E.].—E. & M. J. May 13 1916; p 859; pp ¾*; 25c.

Beckett, P. G.—*The Water Problem at the Old Dominion Mine, Arizona.* [Geology is described as related to water seepage. Pumping, including air-lifts, is then taken up and systems and methods of detailed operations described].—Bull. A. I. M. E. April 1916; p 679; pp 32*; 35c.

Bennet, C. K.—*Air in Compression and Expansion.* [Abst. from Power. A curve giving much data is given].—Comp. Air Mar. 1916; p 7932; pp 1¾*; 20c.

Berry, C. H.—*The Ellenwood Steam Charts.* [A complete explanation and reproduction of the same with information regarding their practical use].—Sibley Engg. May 1916; p 257; pp 8*; 30c.

Buffum, F. D.—*Handling Compressed Air in Shaft Sinking.* [A booster compressor is employed to keep water from the air transmission line. An air injector for ventilating and a water ejector are described, besides some notes on piping in shaft work].—Coal Age June 3 1916; p 956; pp 2½*; 20c.

Bulkley, J. N.—*Application of Electric Power to Rand Mining Work.* [A paper read before the A. I. M. E. Air compressors and pumps are dealt with in particular].—S. Afr. Mg. Jnl. Mar. 25 1916; p 694; pp 1; April 1; p 13; pp 1; 70c.

Bulkley, Norman.—*Application of Electric Power to Mining Work in the Witwatersrand Area, South Africa.* [A complete description of the use of electricity for crushing, milling, air compressing, hoisting, etc. A comparison is made between the steam and electric power costs, and charts and drawings of arrangements are given].—A. I. M. E. Bull. Feb. 1916; p 355; pp 19*; 35c.

Cameron, W. G.—*Use of Compressed Air in Toronto Sewer Construction.* [Describes the methods of tunneling and gives costs of operating the compressed air plant].—Canadian Eng. Mar. 2 1916; p 295; pp 5¾*; 35c.

Comstock, A. E.—*Pneumatic Concrete Mixing, Conveying and Placing.* [Abst. of a paper read before the American Concrete Inst.]—Comp. Air. May 1916; p 7982; pp 2½*; 20c.

Copeland, F. W.—*A Mounted Hammer Drill for Drifting with Pneumatic Feed.* [Describes in detail post attachments for converting the hammer drill into a type operating similar to the mounted post drill except for the pneumatic instead of screw feed].—Canadian Mg. Jnl. April 15 1916; p 193; pp 3*; 35c.

Diserens, Paul.—*Determining the Capacities of Compressors.* [A method for the user which does not require laboratory results for the computations].—Iron Age June 15 1916; p 1438; pp 3*; 30c.

Elliot, H.—*Electrical Plant at Frickley Colliery, England.* [A paper read before the Assn. of Electrical Mining Eng.].—I. & C. Tr. Rev. Mar. 24 1916; p 336; pp 2½; 35c.

Elmendorf, W. J.—*Cost of a Crosscut Adit.* [Excerpt from a paper in Trans. Can. Mg. Inst. The figures were obtained from the Portland Canal Tunnels, Ltd., B. C.].—E. & M. J. June 3 1916; p 987; pp ¾; 25c.

Guy, H. L.; Jones, P. L.—*Turbo-Blowers and Compressors.* [A paper read before the South Wales Inst. of Eng.].—I. & C. Tr. Rev. Feb. 4 1916; p 117; pp 2*; Feb. 11; p 148; pp 1½*; 70c; Coll'y Guard. Feb. 4; p 215; pp 2⅔*; 35c.

Green, Raoul.—*Horse Haulage Versus Compressed Air Haulage—A Comparison of Costs.* [The comparison is made with actual figures and discussion].—Canadian Mg. Inst. Bull. June 1916; p 570; pp 5; 35c.

Hawley, R. S.—*Modern Practice in Air Compression.* [A general discussion of the topic].—Colo. School of Mines Mag. Jan. 1916; p 3; pp 1½*; 35c.

Heidelberg, F. M.—*Compressed Air Equalizing System at Copper Queen, Arizona.* [Abst. from an article in the E. & M. J.].—Comp. Air Feb. 1916; p 7885; pp 3½*; 20c.

Hirschberg, C. A.—*Bypass Around Leaky Tunnel of Catskill Aqueduct.* [The Moodna tunnel to which this was supplementary was a pressure tunnel. Methods of drilling and blasting are described].—Comp. Air Jan. 1916; p 7843; pp 4¼*; 20c.

Hirschberg, C. A.—*Subway Excavations—Yesterday and Today.* [A review on tunnel work with machine drills for

the construction of subways].—Mg. World Mar. 25 1916; p 603; pp 3½*; 10c.

Hirschberg, C. A.—*Subway Excavating Revolutionized.* [From the Mg. World. In some detail gives the methods of using machine drills in the work].—Comp. Air May 1916; p 7971; pp 5*; 20c.

Johnson, J. E., Jr.—*The Mechanical Principles of the Blast Furnace.* [Confined to the theory of the blast as related to the furnace construction and dimensions thereof].—Met. & Chem. Engg. Jan. 1 1916; p 39; pp 7½*; 30c.

Kennedy, E. P.—*Study of Machine Drilling at Treadwell Mines, Alaska.* [From the E. & M. J. Gives data and description on results of drilling].—Comp. Air May 1916; p 7976; pp 1¾; 20c.

McDonald, P. B.—*Drilling in Narrow Stopes.* [A description of drilling operations and costs in the mines of Grass Valley, California].—M. & S. P. Jan. 1 1916; p 14; pp 3*; 20c.

Megson, J. E.; Jones, H. S.—*Diesel Engine Practice.* [Describes several types and an air compressor installation with Diesel power].—Jnl. of Elect. Power & Gas Jan. 29 1916; p 88; pp 2*; 35c.

Miles, John B.—*Details of a Dry Blast Apparatus.* [The claim is that the dry blast will increase output instead of having to increase their furnace capacity. The installation is described].—I. Tr. Rev. Jan. 20 1916; p 193; pp 1½*; 25c.

Nordel, C. H.—*Comparative Efficiencies of Various Types of Air Compressors.* [Abst. from an article in the Engg. News].—E. & M. J. Feb. 5 1916; p 255; pp 1¼*; 25c.

Phelps, C. C.—*Underground Compressor Installation in Mines.* [A general discussion of their use underground].—Mg. World Feb. 12 1916; p 358; pp 2¼*; 10c.

Richards, John.—*Adit Enlargement and Alignment at the Alaska Juneau.* [Jackhamers are used. Costs and details are given].—E. & M. J. June 3 1916; p 982; pp 1*; 25c.

Rickard, T. A.—*The Flotation Process.* [A compilation of articles from different sources which appeared during 1915 in the M. & S. P. Electrostatic theories and methods are described with pneumatic and other methods. Methods of testing ores are also given in some papers].—M. & S. P.; book; pp 364*; $2.

Saunders, W. L.—*Lifting Ground Water by Compressed Air.* [A paper read before the Pan-American Scientific Congress which is very complete].—Comp. Air Jan. 1916; p 7850; pp 9*; 20c.

Scott, H. E.—Give the Compressor a Chance. [From the E. & M. J. A general talk on the operation of small air compressors].—Comp. Air April 1916; p 7948; pp 1½; 20c.

Symons, S. W.—*Small Drills for a Small Tunnel.* [From Engineering News. The tunnel section was 900 ft. in granite and 5 by 6 ft. section].—Comp. Air April 1916; p 7950; pp 2¼*; 20c.

Symons, S. W.—*Using Corliss Engines with Fuel at 40c Per Ton.* [Cross-compound Corliss-engine with air compressor shows saving over straight-line compressors].—Coal Age April 1 1916; p 566; pp 1*; 20c.

Walshe, J. M.—*High-Speed Air Compressors for Mining Work.* [A paper read before the Inst. of Mining & Mechanical Eng., England].—I. & C. Tr. Rev. Jan. 21 1916; p 59; pp 2; Coll'y Guard. Jan. 21 1916; p 117; pp 2; 35c.

Walshe, J. M.—*High Speed Air Compressors for Mining Service.* [From the Bull. of the North Staffordshire Inst. of Mining & Mech. Eng.].—Comp. Air Mar. 1916; p 7907; pp 6¼*; 20c.

Weeks, C. F.—*A Rock-Drill Stamp-Mill.* [The ordinary rock-drill is placed in a vertical position with the piston end in a mortar. It will handle a ton of quartz in 14 hours through a No. 1 screen].—M. & S. P. Jan. 29, 1916; p 161; pp 1*; 20c.

——— *Air Lift Pumping.* [Gives many points of detailed interest and a general review of the subject].—Pract. Eng. Jan. 1 1916; p 63; 4½*; 60c.

——— *Devices That Increase Efficiencies in Mines.* [A talk on various equipment for repairing water and compressed air line leaks and special joints for the same].—Mg. World Jan. 8 1916; p 79; pp 1½*; 10c.

——— *Electric Power for Public Works as Brought Out at the Wilson Ave. Tunnel, Chicago.* [A complete description of electric power used in the tunnel is given. Electricity is here used for hoisting, air compression, rock crushing, haulage, ventilation and lining the tunnel with concrete].—Elect. Rev. & West. Elect. June 3 1916; p 1017; pp 6¼*; 20c.

——— *Flow of Air Through Nozzles.* [Discussion and description on experimental work with the flow of compressed air].—Jnl. Inst. Mech. Eng., London, Mar. 1916; p 93; pp 18*; 50c.

——— *Loss of Power in Compressors.* [Brings out causes which will make a mechanical loss in the air compressor].—S. L. Mg. Rev. May 15 1916; p 21; pp 2*; 25c.

——— *Pan-American Congress, Proceedings of the Second Meeting.* [Abstracts of the more important papers read].—Mg. World Jan. 8 1916; p 63; pp 7; 10c.

——— *Some of the New Things in Mining in* 1915. [Editorial review of installations, such as air lifts, hoists, compressed air locomotive, hydroelectric plants, cableway for reclaiming tailings, etc.].—Mg. World Jan. 1 1916; p 44; pp 5½*; 10c.

COMBUSTION ENGINES

Burrell, G. A.; Biddison, P. M.; Oberfell, G. G.—*The Extraction of Gasoline from Natural Gas by Absorption Methods.* [A paper read before the National Gas Assn. of America].—Met. & Chem. Engg. June 1 1916; p 651; pp 1½; 30c.

Chalkley, A. P.—*Diesel Engines for Land and Marine Work.* [Takes up both theory and practice].—Constable & Co., London; book; pp 368*; $2.50.

Dearle, G.—*Power from Coke Oven Gas.* [A paper read before the Yorkshire section of the Inst. of Elect. Eng. A very complete description is given of a combustion engine using this kind of gas. Lubrication, starting the engine, purifying the gas, gas composition and consumption and many other items of interest are given].—Coll'y Guard. May 12 1916; p 895; pp 2*; 35c.

Eye, C. M.—*Gold Mining in the Philippines.* [Water power and combustion engines are used considerably. The descriptions are general, but separate in describing the operations of companies. Both amalgamation and cyanidation are employed].—M. & S. P. June 17 1916; p 900; pp 2½*; 20c.

Hays, J. W.—*Semi-Technical Studies in Physical Science.* [By description and tabulated data the costs of power for steam, gas and oil engine, electric power plants varying from 20 to 500 kw., are compared. Costs for power in a 100-kw. plant with natural gas, illuminating gas and gasoline engines are also given].—Steam June 1916; p 157; pp 3¾; 35c.

Hood, O. P.; Kudlich, R. H.; Burrell, G. A.—*Gasoline Mine Locomotives in Relation to Safety and Health.* [On the care of the engines and their adjustment to make the least obnoxious gases. Methods for analyzing the exhaust gases are also given].—U. S. Bur. of Mines Bull. 74; pp 83*.

Labbe, Charles.—*The Diesel Engine.* [General, with detailed figures on operation, construction, comparison with other power fuel consumption, power developed per quantity of fuel, etc.].—Mex. Mg. Jnl. May 1916; p 165; pp 3*; 35c.

Megson, J. E.; Jones, H. S.—*Diesel Engine Practice.* [On the care and operation of earlier types of engines].—Jnl. of Elect. Power & Gas Jan. 1 1916; p 14; pp 1½; Jan. 8 1916; p 30; pp 2*; Jan. 29 1916; p 88; pp 2*; Feb. 5 1916; p 110; pp 1½*; Feb. 19 1916; p 148; pp 3*; Feb. 26; p 173; pp 2*; Mar. 4; p 190; pp 2; $2.45.

Megson, J. E.; Jones, H. S.—*The Diesel Engine in Practice.* [A book on the practical operation of the Diesel and semi-Diesel types, with methods of testing and costs of construction and operation].—Tech. Book Pub. Co., San Francisco; book; pp 136*; $2.

Nicholls, H. E.—*A Pioneer Bucket Dredge in Northern Nigeria.* [Placer tin is mined, and semi-Diesel engines used for power. Details of mining costs are given].—Bull. Inst. of Mg. & Met., London, No. 137; pp 13*; 50c. Mg. World April 8 1916; p 691; pp 3½*; 10c.

Rehfuss, L. A.; Rehfuss, W. C.—*Portable Mining Equipment for Prospects.* [A description of gasoline motor units for work in various capacities at prospects].—E. & M. J. June 10 1916; p 1025; pp 2¾*; 25c.

Salfield, C. S.—*What Is a Semi-Diesel Engine?* [A review of the history of this type and a description of the construction and characteristic features].—Pract. Eng. May 11 1916; p 461; pp 2¼*; 20c.

Trautschold, R.—*Jackets for Oil and Gas Engines.* [Results of tests made to determine the best temperature for the cooling water for securing most efficient results].—Pract. Eng. Mar. 15 1916; p 301; pp 8*; 20c.

——— *Internal Combustion Engines and Coal Gas Producers.* [Speaks of the subject with general pointers on practice].—Pract. Eng. April 15 1916; p 379; pp 1¼; 20c.

——— *Lignite Gas Producers.* [The theory, operation of and a discussion on the use of the gas for combustion engines].—Pract. Eng. Jan. 15 1916; p 132; pp 2½; 20c.

——— *Rules for Conducting Performance Tests of Power Plant Apparatus.* [Gives methods of procedure and kinds of apparatus to be used in testing steam and combustion engine power plants].—A. I. Mech. E.; Report; pp 215*; 35c.

——— *Tar and Tar Oils for Use in Diesel Engines.* [A paper read before the Diesel Engine Users' Assn., Eng-

land].—Engg. April 7 1916; p 339; pp ⅝; 35c.

STEAM AND STEAM ENGINES

Allison, L. R. W.—*An Interesting Mines Power System.* [Describes the installation of the Arkansas Valley Light & Power Co., in conjunction with whose electric power near Pueblo, Colo., steam plants are used and mining cost reduced].—Pract. Eng. April 1 1916; p 331; pp 1*; 20c.

Bacon, C. J.—*How to Utilize Waste-Heat Boilers.* [A paper read before the American Iron & Steel Inst.].—I. & C. Tr. Rev. Feb. 11 1916; p 154; pp 1⅜*; 35c.

Bulkley, J. N.—*Application of Electrical Power to Rand Mining Work.* [Results with electric winding and comparison of the cost of steam and electricity are discussed].—S. Afr. Mg. Jnl. April 29 1916; p 112; pp 1; 35c.

Clarke, A. V.—*Power-Plant Losses at High Altitudes.* [A general discussion of the losses on account of the generation of steam. Curves and formulæ are given].—Comp. Air May 1916; p 7989; pp 1¾*; 20c.

Dean, F. W.—*Design of Fire Tube Boilers.* [Dangerous features of modern boiler design and how they may be improved].—Pract. Eng. April 1 1916; p 336; pp 3*; 20c.

Diehl, A. N.—*Modern Methods of Burning Blast-Furnace Gas in Stoves and Boilers.* [Shows burners suitable for burning the gas under boilers].—I. & C. Tr. Rev. Jan. 28 1916; p 89; pp 1*; 35c.

Dorman, H. R.—*The Water Softener and Boiler Feed Water.* [In discussing the advantages of using a softener the heat losses due to boiler scale are plotted in a curve].—Wis. Eng. May 1916; p 388; pp 9*; 25c.

Guilleaume, M.—*Investigation of the Pressure Drop in Steam Pipes.* [Describes a method for testing lines to ascertain the same].—Pract. Eng. Mar. 15 1916; p 284; pp 4*; April 15 1916; p 369; pp 2½*; 40c.

Haanel, B. F.—*The Value of Peat Fuel for Power.* [Compares peat as a fuel with coal bringing out factors in regard to their respective costs and efficiency].—Jnl. American Peat Soc. April 1916; p 47; pp 15*; $1.60.

Hadley, F. L.—*Welding Natural Gas Mains.* [A paper read before the Natural Gas Assn. Treats on the repair of both natural gas and steam mains].—Acetylene Jnl. June 1916; p 515; pp 2½; 20c.

Hatch, J. N.—*Power Station Buildings.* [Features for planning central electrical power plants. The subject is treated on in a broad way].—Jnl. Soc. Eng. Mar. 1916; p 266; pp 22*; 60c.

Hays, J. W.—*Semi-Technical Studies in Physical Science.* [By description and tabulated data the costs of power for steam, gas and oil engine, electric power plants varying from 20 to 500 kw., are compared. Costs for power in a 100-kw. plant with natural gas, illuminating gas and gasoline engines are also given].—Steam June 1916; p 157; pp 3¼; 35c.

Hedrick, E. R.; Fessenden, E. A.—*On the Transmission of Heat in Boilers.* [On the theory and mathematics of the question].—Paper American Soc. of Mech. Eng.; pp 29*; 35c.

Hubbard, C. L.—*How to Use Superheated Steam.* [The practical application of this kind of steam as the result of tests and investigation. Details are given].—Engg. Mag. June 1916; p 413; pp 7; 35c.

Knowles, C. R.—*The Use of Oil Engines for Pumping.* [A paper read before the Illinois section of the American Water Works Assn. The results of a number of tests on different kinds of fuel are given].—Canadian Eng. June 29 1916; p 676; pp 2¼; 35c.

Moreland, F. A.—*"Soot"—Its Composition, Its Effects on Boiler Efficiency, Its Removal by Mechanical Soot Cleaners.* [Reprinted from the Jnl. of the Ohio Soc. of Mech., Elect.. & Steam Eng.]—Steam June 1916; p 160; pp 2; 35c.

Smith, P. H.—*The Diesel Engine Indicating.* [Takes up the proper use of the indicator for indicating pressures and piston operation in the Diesel engine].—Petro. World Mar. 1916; p 129; pp 2½*; 35c.

Streeter, W. E.—*Steam-Turbine-Driven Centrifugal Pumps.* [Gives detailed information on the De Laval pumps recently installed at a pumping station near Montreal, Quebec].—Mg. World April 14 1916; p 829; pp 1¾*; 10c.

Symons, S. W.—*Using Corliss Engines with Fuel at 40c Per Ton.* [Cross-compound Corliss engine with air compressor shows saving over straight-line compressors].—Coal Age April 1 1916; p 566; pp 1*; 20c.

Tenney, E. H.—*Test Methods for Steam Power Plants.* [For the engineer, superintendent, etc.].—Van Nostrand; book; pp 224*; $2.50.

Trautschold, Reginald.—*Co-Relation of Factors Affecting the Cost of Power.*

[Gives various curves, data and discussion on the cost of steam power].—Engg. Mag. Mar. 1916; p 860; pp 9*; 35c.

Uehling, E. A.—*Steam Boiler Efficiency.* [Factors affecting boiler efficiency and recording instruments of value in finding these factors for elimination].—Pract. Eng. April 15 1916; p 381; pp 3; 20c.

Vater, F. F.—*Boiler Feed Water.* [Speaks of a method for making your own chemical solution to prevent the encrusting of the boiler].—Pract. Eng. April 15 1916; p 366; pp 2½; 20c.

Yates, B. C.—*New Construction Work at the Homestake, South Dakota.* [A brief but detailed description of the new steam auxiliary electric station and skip hoist. The central steam plant, electric generating plant and hoist are included].—Pahasapa June 1916; p 31; pp 4; 30c.

Young, C. M.—*Underwood—A Modern Colliery, Pennsylvania.* [Describes the shaft arrangements and power which is both steam and electricity, besides their operation of preparing the coal for market].—Coal Age Jan. 1 1916; p 4; pp 7¼*; 20c.

——— *Efficient Operation of Boiler Rooms.* [Describes many arrangements as coal handling systems, stokers, control of feed-water, etc.].—Pract. Eng. Mar. 15 1916; p 288; pp 3*; 20c.

——— *Ford Collieries Co., New No. 3 Mine, Pennsylvania.* [After a general description of the surface equipment and power plant methods of cutting and haulage are taken up].—Elect. Mg. April 1916; p 33; pp 18*; 20c.

——— *Murray Duplex Boiler.* [Scotch type improved with head and tubes at the rear of the furnace].—Pract. Eng. April 1 1916; p 334; pp 2*; 20c.

——— *Powdered Coal Utilization at Lebanon, Pa.* [Waste-heat boilers are used in conjunction with open-hearth furnaces by the American Iron & Steel Mfg. Co. Details and drawings of their coal crushing plant are given].—Iron Age June 1 1916; p 1317; pp 2¼*; 30c.

——— *Principles of Reciprocating Steam Pumps.* [A practical review of important points].—Pract. Eng. Jan. 1 1916; p 2; pp 3*; 50c.

——— *Single Cylinder, Steam Ends.* [A general discussion and review of the pump].—Pract. Eng. Jan. 1 1916; p 15; pp 6¼*; 60c.

——— *The Oliphant-Johnson Coal Co.'s Mine No. 1.* [The coal seam, power plant, preparation of the coal and other less important items are taken up].—Coal Age Mar. 4 1916; p 409; pp 3½*; 20c.

GAS PRODUCERS; PRODUCER GAS

Carpenter, H. V.—*Producer Gas Power from Northwestern Coals.* [Abst. from the Jnl. of the Oregon Soc. of Engineers].—Jnl. of Elect. Power & Gas April 1 1916; p 264; pp 1¼; 35c.

Christopher, J. E.—*Coal Distillation, Gasification and By-Products.* [A series of articles which appeared in the Science and Art of Mining. The subjects of gas producers, coal distillation and by-products, coke, and by-products from the blast furnace are considered].—Thomas Wall & Sons, Wigan, England; pp 90*; book; 75c.

Estep, H. Cole.—*How Producer Gas Made a Four-Inch Pipe Possible.* [On the use of the gas instead of coke for drying molds. A description of the equipment and operation are given].—Foundry June 1916; p 246; pp 2*; 25c.

Farnham, R. V.—*A Suction Gas Producer Using Bituminous Coal.* [A paper read before the Institution of Eng. and Shipbuilders].—Coll'y Guard. Jan. 28, 1916; p 165; pp 2*; 35c.

Hoffman, Fritz.—*Die Formeln zur Indirekten Analyse von Generatorgas.* [A form for the indirect computation of the analysis of producer gases].—Chem. Ztg. Jan. 22 1916; p 81; pp 1½; 35c.

Spring, L. W.—*The Open Hearth Process.* [A talk on various methods employed in the process, with a practical talk on the theory of the same].—Valve World June 1916; p 197; pp 8¼*; 20c.

Trautschold, R.—*Gas Producer Control.* [On the vapor control, producer reactions, and water vapor cooling of the fuel bed].—Pract. Eng. May 11 1916; p 459; pp 1¾; 20c.

——— *Internal Combustion Engines and Coal Gas Producers.* [Speaks of the subject with general pointers on practice].—Pract. Eng. April 15 1916; p 379; pp 1¼; 20c.

——— *Lignite Gas Producers.* [The theory, operation of and a discussion on the use of the gas for combustion engines].—Pract. Eng. Jan. 15 1916; p 132; pp 2½; 20c.

MISCELLANEOUS POWER AND MACHINERY

Armstrong, F. H.—*A New Electro-Hydraulic Shovel.* [A paper read before the A. I. M. E. The main power is derived from water under pressure. A separate motor operates other less important

parts. The shovels are used in moving stock piles at Michigan iron mines].—I. Tr. Rev. Feb. 17 1916; p 393; pp 2½*; 25c.

Bromley, C. H.—*Engineers' Operating Data File.* [A file in which data regarding the sizes and kind of the various accessories and machines had in the plant may be kept and information thus serve as a ready reference].—Coal Age May 13 1916; p 833; pp 1¾*; 20c.

Ellsworth, C. E.; Davenport, R. W.; Hoyt, J. C.—*A Water Power Reconnaissance in South-Central Alaska.* [One section is given over to southeastern Alaska].—Water Supply Paper 372; pp 173*.

Hicks, H. L.—*Quarrying at Rockland Lake, New York.* [The haulage, drilling, power equipment and operations are described in a general way].—Engg. & Cont. June 7 1916; p 512; pp 1¾*; 20c.

Mead, D. W.—*Water Power Engineering.* [The theory, investigation and development of water power].—McGraw-Hill; book; pp 843*; $5.

McDonald, P. B.—*Notes from Grass Valley, California.* [Drawings of the North Star mine's head-frame and engine house are given].—M. & S. P. Mar. 4 1916; p 343; pp 3*; 20c.

Mercer, J. W.—*Mining in Ecuador.* [A paper read before the Pan-American Scientific Soc. The geology and gold mines are spoken of, besides a review of the available water power and sanitation in the camps].—E. & M. J. Feb. 19 1916; p 343; pp 3¾; 25c.

Polakov, W. N.—*Operating Power Costs.* [A method of standardization to show how closely the minimum is approached].—Iron Age Jan. 13 1916; p 142; pp 2; 30c.

Trautschold, R.—*Co-Relation of Factors Affecting the Cost of Power.* [Curves and description are given to illustrate the subject clearly].—Engg. Mag. Mar. 1916; p 860; pp 9*; 35c.

——— *Loss of Power in Compressors.* [Brings out causes which will make a mechanical loss in the air compressor].—S. L. Mg. Rev. May 15 1916; p 21; pp 2*; 25c.

——— *Power-Driven Pumps.* [Several types and makes are described].—Pract. Eng. Jan. 1 1916; p 27; pp 9½*; 60c.

——— *Rules for Conducting Performance Tests of Power Plant Apparatus.* [Gives methods of procedure and kinds of apparatus to be used in testing steam and combustion engine power plants]:—A. I. Mech. E.; Report; pp 215*; 35c.

——— *The Mechanical World Pocket Diary and Year Book for* 1916. [A concise treatise on steam and combustion engines, treating the same, steel construction, and information for the machine and repair shop].—Norman Remington Co., Baltimore; pp 428*; book; 25c.

——— *Western States Water Power Conference.* [A meeting of state officials from the different states to discuss the question of using our water power].—C. C. Chapman, Portland, Ore.; book; pp 279.

PART IV.

MISCELLANEOUS.*

CHAPTER XX.

MISCELLANEOUS COSTS

Alderson, M. W.—*Mining Possibilities in Colombia, S. A.* [A description of the alluvial deposits is given with details of operation at several properties. In discussing the good points and faults items of financial interest, production figures and costs are brought out].—Mg. World June 24 1916; p 1169; pp 3*; 10c.

Angwin, B.—*Cornish Mines During 1915, England.* [Gives the revenues, production and costs at the principal mines during 1915. Considerable of the information is in tabulated form].—Mg. Mag. April 1916; p 204; pp 2; 50c.

Barnitz, H. L.—*The Technical Production of Hydrogen and Its Industrial Application.* [Reprint from Met. & Chem. Engg. It is used to make the oxyhydrogen flame for welding. Several different processes are described in general and some details given].—Barnitz, New York; pp 11; 30c.

Beals, A. E.—*The Cost of Burning Brick in Scove Kilns.* [A paper read before the A. I. M. E., describing the method of burning, accompanied with costs of operations].—B. & C. Rec. Feb. 1 1916; p 229; pp 2*; 30c.

Beckman, J. W.—*Pacific Coast Electrochemical Possibilities Compared with Norway and Sweden.* [Abst. of a paper read before the American Chemical Soc. Power and labor costs with other figures are given].—Jnl. of Elect., Power & Gas Feb. 26 1916; p 163; pp 4*; 35c. Mg. & Oil Bull. April 1916; p 101; pp 6¾; 25c.

Bulkley, Norman.—*Application of Electric Power to Mining Work in the Witwatersrand Area, South Africa.* [A complete description of the use of electricity for crushing, milling, air compressing, hoisting, etc. A comparison is made between the steam and electric power costs, and charts and drawings of arrangements are given].—A. I. M. E. Bull. Feb. 1916; p 355; pp 19*; 35c. S. Afr. Mg. Jnl. April 29 1916; p 112; pp 1; 35c.

Cameron, W. G.—*Use of Compressed Air in Toronto Sewer Construction.* [Describes the methods of tunneling and gives costs of operating the compressed air plant].—Canadian Eng. Mar. 2 1916; p 295; pp 5¾*; 35c.

Clarke, T. C.—*The Present Status of the American By-Product Coke Oven Industry.* [Treats on costs and general discussion].—Met. & Chem. Engg. May 15 1916; p 601; pp 2¼; 30c.

Cherrington, F. W.—*Creosoted Piling and Poles.* [Costs, descriptions of methods and advantages obtained by the treatment are spoken of].—Amer. Wood Preservers' Assn. 1916 Report; p 61; pp 9½*; 35c.

Coleman, T. E.—*Civil Engineers' Cost Book.* [Actual costs of structures are given].—E. & F. N. Spon, London; book; pp 381*; $1.75.

Fearing, F. C.—*Relative Costs of Coal and Oil Fuels.* [In full from Power. A general comparison of the two, with figures on the cost of each].—E. & M. J. Mar. 25 1916; p 555; pp 1¾*; 25c.

Fox, W. G.—*Earthenware Cost-Taking.* [Discusses the same and gives details of methods to follow for doing the same].—Trans. English Ceramic Soc. Vol. XV; p 61; pp 10; 65c.

Gleditsch, Ellen.—*The Life of Radium.* [Radium was generally believed to disintegrate from uranium, but of late it has been found to disintegrate from ionium and the article treats on a theory regarding a constant for obtaining the rate at which it disintegrates from ionium solutions].—Amer. Jnl. of Sci. Jan. 1916; p 112; pp 13; $1.10.

Grady, W. H.—*Selecting and Buying Fuel.* [Charts, tables, description and discussion having to do with the selection of any class of fuel so as to get a minimum cost per ton. Heat value of the fuel and situation of the product with respect to the user are the main points].—Amer. Wood Preservers' Assn. 1916 Report; p 91; pp 14*; 35c.

Green, Raoul.—Horse Haulage Versus

*Includes Miscellaneous Costs; Testing; Waste Disposition; Metallography; Law, Legislation and Taxation; Conservation; Government Ownership; Historical; Financial and Business Organization; Educational; Schools and Societies; General Miscellany.

Compressed Air Haulage—A Comparison of Costs. [The comparison is made with actual figures and discussion].—Canadian Mg. Inst. Bull. June 1916; p 570; pp 5; 35c.

Grosvenor, W. H.—*The New Place of Magnesium in Industry.* [A paper read before the American Electrochemical Soc. Its uses in alloys and as a scavenger in steel, with costs of making, production and some of its properties are given].—Iron Age Feb. 17 1916; p 434; pp 2; 30c.

Haanel, B. F.—*The Value of Peat Fuel for Power.* [Compares peat as a fuel with coal bringing out factors in regard to their respective costs and efficiency].—Jnl. American Peat Soc. April 1916; p 47; pp 15*; $1.60.

Harza, L. F.—*Report on the Columbia River Power Project.* [On the capital and annual cost of power therefrom].—Jnl. of Elect. Power & Gas Mar. 11 1916; p 210; pp 2¾; Mar. 18; p 225; pp 2; 70c.

Hays, J. W.—*Semi-Technical Studies in Physical Science.* [By description and tabulated data the costs of power for steam, gas and oil engine, electric power plants varying from 20 to 500 kw., are compared. Costs for power in a 100-kw. plant with natural gas, illuminating gas and gasoline engines are also given].—Steam June 1916; p 157; pp 3¼; 35c.

Ireland, J. B.—*Oil Shale Industry Planned for Utah.* [Speaks of several methods for refining the material, and also discusses costs].—S. L. Mg. Rev. Mar. 30 1916; p 14; pp 1¾*; 25c.

Jackling, D. C.—*A Year's Results at the Chino Copper Property, New Mexico.* [Abst. from the annual report. Milling and mining operations are given with figures on production and the itemized cost for the same].—Mg. World April 22 1916; p 787; pp 1¾; 10c.

Megson, J. E.; Jones, H. S.—*The Diesel Engine in Practice.* [A book on the practical operation of the Diesel and semi-Diesel types, with methods of testing and costs of construction and operation].—Tech. Book Pub. Co., San Francisco; book; pp 136*; $2.

Megson, J. E.; Jones, H. S.—*The Diesel Engine in Practice.* [Costs of operating and descriptions of construction are given, including engines direct connected and otherwise with electric generators.—Jnl. Elect., Power & Gas Feb. 19 1916; p 148; pp 3*; Feb. 26; p 173; pp 2*; Mar. 4; p 190; pp 2; $1.05.

O'Connell, J. J.—*How Two Pumps Effected Costs and Efficiency.* [Shows that *the centrifugal pump* is most favorable].—Coal Age April 1 1916; p 567; pp 1¾*; 20c.

Polakov, W. N.—*Operating Power Costs.* [A method of standardization to show how closely the minimum is approached].—Iron Age Jan. 13 1916; p 142; pp 2; 30c.

Ralston, O. C.—*Statement of Flotation Oils—Market Situation Regarding Flotation Oils.* [A discussion of the market, consumption of oils for flotation, adaptability of the oils and cost of the different kinds].—Mg. World June 10 1916; p 1079; pp 1½; 10c.

Shelley, J. W.—*Graphite in Madagascar.* [Takes up geology, prospecting, mining, costs, labor conditions, production, law and a general description of the country and conditions to be found there].—Mg. Mag. June 1916; p 324; pp 7*; 50c.

Trautschold, Reginald.—*Co-Relation of Factors Affecting the Cost of Power.* [Gives various curves, data and discussion on the cost of steam power].—Engg. Mag. Mar. 1916; p 860; pp 9*; 35c.

Tremoureux, R. E.—*A New Dry-House.* [Costs and details of construction for this house constructed at the Champion mine, Nevada City, Cal., are given].—M. & S. P. June 17 1916; p 903; pp 2½*; 20c.

Wheler, A. S.—*Antimony Production in the Hunan Province, South China.* [A paper read before the Inst. of Mining & Met., London. The deposits, some cost items, methods of concentrating and some information on smelting is given].—Mg. World April 8 1916; p 697; pp 2¾; 10c. E. & M. J. April 8; p 637; pp 4¼*; 25c.

Wollaston, T. R.—*Power and Heat Costs in Pottery Works.* [Treats on the subject under conditions which now exist and points out more economical methods which science will inaugurate in the future].—Trans. English Ceramic Soc. Vol. XV; p 1; pp 24*; 65c.

——— *Central Station Power Applied to Southern Clay Plants.* [An article from the Electrical Rev. on the costs and uses of electrical power in brick plants in southwestern U. S.; also describing their methods of manufacture].—B. & C. Rec. Feb. 15 1916; p 331; pp 4*; 35c.

——— *Chino Copper Co., New Mexico.* [Abst. from annual report. A general review with figures on cost and finances].—E. & M. J. April 22 1916; p 736; pp 1; 25c.

——— *Conversaciones Sobre Contribuclon Minera.* [Some contributions and talks on the mineral industry of South American countries. Copper, lead and pe-

troleum are the principal things considered].—Inf. y Mem. Soc. Ing. Peru Dec. 1915; p 535; pp 26; 75c.

——— *Cost of Making Gasoline by the Rittman Process.*—Mg. World June 17 1916; p 1132; pp ½; 10c.

——— *Cost of Upkeep of Electric Safety Cap Lamps.* [Gives details of cost for a plant handling 250 lamps per day].—Coal Age Mar. 11 1916; p 453; pp 1½*. 20c.

——— *Efficient Operation of the Boiler Rooms.* [A talk on feed-water, fuel and the maintenance of clean boilers].—Pract. Eng. May 15 1916; p 447; pp 1½*; 20c.

——— *Pan-American Congress, Proceedings of the Second Meeting.* Abstracts of the more important papers read].—Mg. World Jan. 8 1916; p 63; pp 7; 10c.

——— *Porcupine Crown Mines, Ltd., Ontario.* [Abst. from a company report, costs, reserves, drilling, operation and other information is given].—Canadian Mg. Jnl. May 1 1916; p 210; pp 1¾*; 35c.

——— *Rules for Conducting Performance Tests of Power Plant Apparatus.* [Gives methods of procedure and kinds of apparatus to be used in testing steam and combustion engine power plants].—A. I. Mech. E.; Report; pp 215*; 35c.

TESTING

Ores, Metals, Etc.

Anderson, R. J.—*Oils and Other Reagents in Flotation.* [A paper read before the A. I. M. E. on the adaptability of various oils, acids, etc.].—Met. & Chem. Engg. Feb. 1 1916; p 135; pp 1¾; 30c.

Avery, P. W.—*Precipitating Action of Carbonaceous Shale in Cyanide Solution.* [The results of many tests made along this line are given with the results plotted in curve form].—M. & S. P. April 8 1916; p 514; pp 3*; 20c.

Babcock, E. J.—*Economic Methods of Utilizing Western Lignites.* [Several uses of the fuel are given, including its use directly as fuel and for making gas. Experimental work is also dealt with].—U. S. Bur. of Mines; Bull. 89; pp 73*.

Bancroft, W. D.—*Ore Flotation.* [A paper read before the A. I. M. E. Treats in general on the more simple theory regarding flotation and the phenomena on which it is dependent].—Met. & Chem. Engg. June 1 1916; p 631; pp 4¾; 30c.

Barker, H. H.; Schlundt, H.—*Experiments on the Separation of Vanadium from Crude Sodium Uranate.* [The methods consist of using ammonium chloride in one case and in the other hydrochloric acid in connection with which leaching may be carried on].—Met. & Chem. Engg. Jan. 1 1916; p 18; pp 5½; 30c.

Blatchford, A. S.—*Influence of Incombustible Substances on Coal Dust Explosions.* [A paper read before the North of England Institute of Mining and Mechanical Engineers]. — Coll'y Guard. April 14 1916; p 704; pp 1⅓*; 35c.

Bleininger, A. V.—*Clay Products Considered as Engineering Materials.* [A paper read before the International Engineering Congress on tests for revealing the properties of clay].—B. & C. Record Jan. 4 1916; p 48; pp 3; 30c.

Bleininger, A. V.—*Testing Clay Refractories.* [A paper read before the New Jersey Clay Workers' Ass'n. Besides the description and results of tests, methods for the classification of fire-clay shapes for industrial purposes are given].—B. & C. Rec. June 6 1916; p 1030; pp 3; 35c.

Boltwood, B. B.—*The Life of Radium.* [Deals with theories and tests on the number of years which radium will hold its natural properties and not break up into other elements].—Radium April 1916; p 9; pp 7½*; 35c.

Bridges, R. W.—*The Metallurgy of Canadian Cobalt Ores.* [The results of much satisfactory investigating. Nickel, arsenic, cobalt, and silver are obtained and details are given on a 3 months' test of roasting, in regard to silver losses].—Canadian Mg. Jnl. Feb. 1 1916; p 68; pp 2; 35c.

Buck, D. M.; Handy, J. O.—*Research on the Corrosion Resistance of Copper Steel.* [A number of tests showing that copper alloyed with steel makes the metal more resistive to weather, etc.].—Jnl. Ind. & Eng. Chem. Mar. 1916; p 209; pp 8*; 60c.

Burgess, G. K.; Waltenberg, R. G.—*Further Experiments on the Volatilization of Platinum.* [Tests were made at 700, 1,000 and 1,200. Also with hydrochloric and hydrofluoric acids].—U. S. Bur. of Stand. Sci. Paper 280; pp 9; 15c.

Burman, B. F.—*Coal and Coke Efficiency in Blast Furnace Operations.* [A number of tables and accompanying description is given with regard to the efficient use of the fuel].—Met. & Chem. Engg. Feb. 1 1916; p 137; pp 3; 30c.

Chapman, C. M.; Johnson, N. C.—*Quality of Concrete by Tests of Sand.* Test methods are discussed and describes a portable machine for checking and test-

ing the raw materials].—Sibley Jnl. Jan. 1916; p 142; pp 6*; 30c.

Clark, J. D.; Menaul, P. L.—*The Role of Colloidal Migration in Ore Deposits.* [A number of experiments made to determine the colloidal properties instigated in metallic particles while in the suspension of molten magma and other natural solutions allied to the rock formations].—Econ. Geol. Jan. 1916; p 37; pp 5; 60c.

Clayton, C. Y.; Peterson, C. E.—*Oils for Flotation.* [Describes tests made on a large number of oils at the laboratory of the Missouri School of Mines. The log-sheets showing the results of these tests as taken are given].—M. & S. P. April 22, 1916; p 598; pp 4*; 20c.

Clement, J. K.; Scholl, L. A.—*The Inflammability of Illinois Coal Dusts.* [Contains a description of the electrical apparatus used and results of the tests on samples from different places in the same district and from different districts. Results are tabulated and plotted as curves]. U. S. Bur. of Mines Bull. 102; pp 74*; 25c.

Cobb, John.—*Refractory Materials and Salty Coal.* [A paper read before the Coke Oven Managers' Assn. Speaks of test work showing the effect of salts contained in coal on the refractory lining of coke ovens].—Coll'y-Guard. Mar. 31 1916; p 605; pp 1½; I. & C. Tr. Rev. Mar. 31; p 374; pp 1½; 35c.

Holler, H. D.; Peffer, E. L.—*Relation Between Composition and Density of Aqueous Solutions of Copper Sulphate and Sulphuric Acid.* [The work has a direct bearing on the electrolysis of copper].—U. S. Bur. of Stand.; Sci. Paper 275; pp 9*.

Karr, C. P.; Rawdon, H. S.—*Standard Test Specimens of Zinc Bronze.* [The first part is on the testing for mechanical properties and the second on the microstructure of the alloy].—U. S. Bur. of Stand. Tech. Paper 59; pp 67*.

Mathers, F. C.; Kuebler, J. R.—*Addition Agents in the Electro Deposition of Silver from Silver Nitrate Solutions.* [A paper read before the American Electrochem. Soc.].—Chem. Eng. June 1916; p 243; pp 4½; 35c.

Matheuson, C. H.; Philips, A.—*Recrystallization of Cold-Worked Alpha Brass on Annealing.* [Gives a metallographic description of the effects of annealing on the structure and properties of the alloy].—A. I. M. E. Bull. Jan. 1916; p 1; pp 50*; 35c.

McGrigor, G. D.—*Field Analysis of Minerals.* [A number of dry and wet chemical qualitative tests for distinguishing minerals in the field].—Tech. Bookshop, London; book; pp 86*; $1.50.

Mostowitsch, W.—*Extraction of Gold and Silver from Matte by Lead.* [Abst. translation from the Jnl. of the Russian Metallurgical Soc. For the greater part the text is on the results of experimental work].—Met. & Chem. Engg. June 15 1916; p 705; pp 2¾*; 30c.

Mostowitsch, W.—*The Decomposition and Reduction of Lead Sulphate at Elevated Temperatures.* [Much data of this nature is conflicting. This paper gives the results of various thermic tests along this line].—Bull. A. I. M. E. May 1916; p 871; pp 10; 35c.

Mowat, J. F.—*Rigid Tests for Fire Brick and Fire Clay.* [A description of physical and heat tests for brick and clay].—B. & C. Record Jan. 4 1916; p 32; pp 4*; 30c.

Peters, Franz.—*Forschungen und Fortschritte auf dem Gebeit der Elektrometallurgie des Aluminums* 1906-1915. [Research and practice on the elctrometallurgie of aluminum].—Glückauf Jan. 22 1916; p 5½; 50c.

Porter, H. C.; Ralston, O. C.—*Some Properties of the Water in Coal.* [Gives details of the results and methods used in the laboratory on this work].—U. S. Bur. of Mines; Tech. Paper 113; pp 30*; 15c.

Ralston, O. C.; Allen, G. L.—*Testing Ores for Flotation Process.* [Abst. from a U. S. Bureau of Mines report describing tests to be made on ores for flotation].—M. & S. P. Jan. 1 1916; p 8; pp 6*; 20c.

Ralston, O. C.; Allen, G. L.—*Testing Ores for the Flotation Process.—II.* [Abst. from U. S. Bureau of Mines' report describing flotation machines and apparatus for testing ores in the flotation process].—M. & S. P. Jan. 8 1915; p 44; pp 5*; 20c.

Ralston, O. C.—*The Control of Ore Slimes.* [Published by permission of the U. S. Bur. of Mines. Deals with the effect of heat and other agencies in the settling of slimes. Curves of various kinds are reproduced].—E. & M. J. May 20 1916; p 890; pp 4¾*; 25c.

Sebast, F. H.; Gray, G. L.—*The Electrical Resistances and Temperature Coefficients of Nickel-Copper-Chromium and Nickel-Copper-Manganese Alloys.* [Gives the results of laboratory tests].—American Electrochem. Soc. Bull. p 203; pp 10*; 35c.

Sherwood, C. F.—*Pine Oil for Flotation.* [Results of tests on the same].—E. & M. J. Jan. 1 1915; p 21; pp 1¼*; 25c.

Stander, H. J.—*Interfacial Tension in Flotation.* [On the action of oils and acids based on electrostatic phenomena and interfacial tension].—E. & M. J. Mar. 25 1916; p 576; pp 3; 25c.

Storey, O. W.—*Review of Recent Progress in Electrolytic Iron.* [Reviews the results of investigation along this line which may eventually offer a method of working the low grade deposits now known].—American Electrochem. Soc. Bull. p 169; pp 11; 35c.

Taggart, A. F.; Young, R. W.—*Grinding Brass Ashes in the Conical Ball Mill.* [In working this alloy ashes consist of slag, sweepings, overflow from the molds, etc. Tests are described on grinding the ashes previous to concentrating on tables].—A. I. M. E. Bull. Feb. 1916; p 435; pp 8*; 35c.

Taggart, A. F.; Young, R. W.—*Reclaiming Brass in a Ball Mill.* [A paper read before the A. I. M. E. Tests were made to obtain the right product for concentration. The brass was contained in slag, floor sweepings, etc.].—I. Tr. Rev. Feb. 24 1916; p 440; pp 3*; 25c.

Talbot, A. N.; Slater, W. A.—*Tests of Reinforced Concrete Slab Structures.* [Practical tests which have been made on five different large buildings of concrete. Most minute descriptions are given].—Univ. of Ill. Bull. 84; pp 128*.

Thompson, F. C.—*The Allotropy of Iron.* [Treats on the properties and chemical composition of iron at various temperatures. The results of some tests and discussion are given].—Trans. of Faraday Soc. April 1916; p 134; pp 6½*; 60c.

Turner, W. A.—*The Determination of Vanadium by Cupferron.* [The results of experimental work in which some of the reactions are of use as qualitative tests. Cupferron is in the class of nitro-ammonium salts].—Amr. Jnl. of Sci. April 1916; p 339; pp 5; 60c.

Upton, G. B.—*The Structure and Properties of Materials of Construction.* [A book taking up theory and tests pertaining to the properties and uses of various construction materials].—Wiley & Son; book; pp 325*; $2.50.

Warren, H. M.; Biesecker, A. S.; Powell, E. J.—*Tests on Various Electric Motor-Driven Equipment Used in the Preparation of Coal.* [A number of tests are given with curves and reproductions of recording charts obtained from operations principally, from the tipple].—A. I. M. E. Bull. Feb. 1916; p 181; pp 13*; 35c.

Watts, A. S.—*The Feldspars of the New England and North Appalachian States.* [Contains description of the geology and separate descriptions of the quarries. Tests for the feldspar are given, as are methods of quarrying, pumping, crushing, concentration, etc].—U. S. Bur. of Mines Bull. 92; pp 181*; 35c.

Wig, R. J.; Williams, G. M.; Gates, E. R.—*Strength and Other Properties of Concrete as Affected by Materials and Methods of Preparation.* [Many tests are given, the most important being a long series of tests on concrete mixtures].—U. S. Bur. of Stand. Tech. Paper 58; pp 172*; 45c.

Winmill, T. F.—*The Absorption of Oxygen by Coal.* [A number of tests and analyses along this line are given].—Coll'y Guard. June 16 1916; p 1135; pp 3⅔; 35c.

Winmill, T. F.—*The Estimation of Moisture in Coal.* [A paper read before the Inst. of Mining Eng.].—I. & C. Tr. Rev. June 9 1916; p 671; pp 1*; 35c.

Wright, C. A.—*Flotation Tests on Joplin Lead and Zinc Ores.* [Abst. from a preliminary report by the U. S. Bureau of Mines. Results of the tests are not given in detail, but rather have been used to show the practicability of using this method on the ores].—Mg. World April 15 1916; p 737; pp 2; 10c.

Yensen, T. D.—*Vacuum-Fused Iron with Special Reference to Effect of Silicon.* [The iron-silicon alloy is of particular use in electricity. Results of investigations herein are on the electrical and mechanical properties and metallographic changes produced].—A. I. M. E. Bull. Feb. 1916; p 483; pp 30*; 35c.

——— *Tungsten-Molybdenum.* [Several briefs on the metals and their minerals with chemical test and methods of analysis for the same].—Colo. School Mines Mag. Mar. 1916; p 53; pp 6; 35c.

Mill, Smelter, Etc.

Coe, H. S.; Clevenger, G. H.—*Laboratory Method for Determining the Capacities of Slime-Settling Tanks.* [The work was started at Stanford Univ. and later continued at a Bureau of Mines laboratory and is published with permission of the U. S. Bureau of Mines].—Bull. A. I. M. E. Mar. 1916; p 597; pp 29*; 35c.

Coghill, W. H.—*Research Problems.* [Speaks of his experience in encountering metallurgical problems and describes the way in which he solved them].—M. & S. P. Jan. 29 1916; p 159; pp 2; 20c.

Cottrell, F. G.—*Recent Progress in*

Electrical Smoke Precipitation. [A paper read at the Pan-American Scientific Soc. A historical review of experiments and results in endeavoring to precipitate fine solids carried in gases].—E. & M. J. Feb. 26 1916; p 385; pp 8*; 25c.

Crawford, P. H.—*Working Data on Electrolytic Precipitation.* [Tabulated and other detailed figures on the results of operations].—M. & S. P. April 29 1916; p 634; pp 3½*; 20c.

Cubillo, D. Leanardo.—*La Teoria de las Fases y su Aplicacion al Estudo de la Salucion Hierro-Carbono.* [On the theory and practice of the solution of pure carbon by iron. Results of tests and investigations are also given].—Revista Minera Feb. 1 1916; p 57; pp 4¼*; Feb. 8; p 69; pp 2½; Feb. 16; p 81; pp 1¾*; Feb. 24; p 97; pp 1*; Mar. 1; p 106; pp 1¾*; Mar. 8; p 118; pp 1; $2.10.

Dudley, Boyd, Jr.—*The Distribution of Silver Between Metallic Lead and Litharge Containing Slag.* [Formulæ which may be used for correction of this loss are given and a complete review of investigations made to determine what amount of silver is in the lead and what part in the litharge slag, is given].—Met. & Chem. Engg. June 15 1916; p 695; pp 6*; 30c.

Fischer, H.—*Effect of Black Slate on Cyanidation.* [The results of a number of tests in tabulated form are given and accompanied with description of the tests].—M. & S. P. May 20 1916; p 743; pp 2¾; 20c.

Free, E. E.—*Rate of Slimes Settling.* Experimental work having to do with the rate at which various slimes settle. Some are slow, due to the colloidal properties which they possess].—E. & M. J. April 15 1916; p 681; pp 5½; 25c.

Free, E. E.—*Sedimentation and Flocculation.* [A detailed review of properties and peculiarities of fine particles in concentration which are colloidal or floating properties mostly].—E. & M. J. Mar. 4 1916; p 429; pp 3¾*; 25c.

Hamilton, Fletcher.—*Concentration of Quicksilver Ores in California.* [Tests are being made as to the applicability of concentrating before the thermic treatment. High extraction by water concentration and flotation is claimed].—Mg. World May 27 1916; p 997; pp 1; 10c.

Hofman, H. O.—*The Behavior of Stibnite in an Oxidizing Roast.* [Gives the results of experimental work on the roasting of stibnite (antimony sulphide)].—A. I. M. E. Bull. Jan. 1916; p 91; pp 97*; 35c.

Johnson, G. E.—Effect of Borax in Matte Fusion. [Describes the method of investigation and gives curves and tables showing the results obtained from the investigations].—E. & M. J. April 8 1916; p 648; pp 2¼*; 25c.

Johnson, J. E., Jr.—*The Calculation of the Burden of the Blast Furnace.* [A complete treatise on the chemistry and computations of charges and other items which have to do with amounts and things which the blast furnace can take care of].—Met. & Chem. Engg. May 1 1916; p 520; pp 4¾; 30c.

Johnson, J. E., Jr.—*The Operation of the Blast Furnace.* [Speaks of the changes in the ascending gas column of the furnace and gives some experimental work done on the same].—Met. & Chem. Eng. Mar. 1 1916; p 266; pp 2½*; 25c.

Martin, W. M.—*Glass Top Concentrating Tables.* [In the form of discussion information is given on comparative tests of tables with wooden and glass tops].—Mg. Mag. May 1916; p 271; pp 2; 50c.

MacKenzie, Geo. C.—*Ore Dressing and Metallurgical Laboratories of the Canadian Department of Mines.* [A description of their equipment and operations published by permission of the Director of Mines].—Canadian Mg. Inst. Bull. Jan. 1916; p 40; pp 7½*; 35c.

McClave, James.—*Difficulties Encountered in Making Oil Flotation Tests.* [A general discussion on the practice of testing oils for use in flotation].—Mg. World June 17 1916; p 1135; pp ¾; 10c.

Randall, C. A.—*Metallurgy at Tough-Oakes Gold Mines, Ltd., Ontario.* [The description is very complete and gives a large amount of specific data, assays, results of tests, etc.].—Canadian Mg. Jnl. May 1 1916; p 225; pp 5*; 35c.

Regg, Gilbert.—*Zinc-Dust Precipitation Tests.* [A discussion on the solubility of cadmium, zinc and lead with each other while in the molten state and thus found in zinc dust used for precipitation from cyanide solutions].—Mg. World Jan. 15 1916; p 122; pp 1; 10c.

Rickard, T. A.—*The Flotation Process.* [A compilation of articles from different sources which appeared during 1915 in the M. & S. P. Electrostatic theories and methods are described with pneumatic and other methods. Methods of testing ores are also given in some papers].—M. & S. P.; book; pp 364*; $2.

Tamaru, S.—*The Experimental Technics of Calorimetric Measurements at High Temperature.* [A purely theoretical treatise on the subject].—Jnl. Soc. of Chem. Indst. Jan. 31 1916; p 81; pp 7½*; 50c.

Thronberry, M. H.—*Soap as a Frothing Agent in Flotation.* [Description and tables showing the results of tests made with this agent are given].—M. & S. P. May 13 1916; p 715; pp 2; 20c.

Trewartha-James, W. H.—*Glass Surfaces in Concentration.* [Treats on the uses of various kinds of glass used in the laboratory and remarks about the extreme sensitiveness of glass in concentration tests].—Mg. Mag. Feb. 1916; p 88; pp 2*; 35c.

Vreeland, G. W.—*Distribution of Raw Materials in the Blast Furnace.* [A paper read before the Amer. Iron & Steel Inst. The information is given as the result of many tests. Suggestions are also given regarding charging as it is related to the correct distribution of materials. Many of the test results are plotted on curves].—Iron Age June 1 1916; p 1332; pp 6*; 30c.

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CONSERVATION

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Arnold, Ralph.—*Conservation of the Oil and Gas Resources of the Americas.* [The occurrence and production from all the fields is discussed with their reserves so as to bring out the subject of conservation. Qualities of the various products are also given].—Eco. Geol. May 1916; p 203; pp 20; 60c.

Babcock, E. J.—*Economic Methods of Utilizing Western Lignites.* [Several uses of the fuel are given, including its use directly as fuel and for making gas. Experimental work is also dealt with].—U. S. Bur. of Mines; Bull. 89; pp 73*.

Bone, W. A.—*The National Importance of Fuel Economy.* [A talk on the subject from the view of conservation of resources].—Trans. English Ceramic Soc. Vol. XV; p 41; pp 14; 65c.

Chance, H. M.—*Conservation of Mineral Resources.* [Abst. from an address given at the dedication of the Mines Bldg. of the Pennsylvania State College].—Queen. Govt. Mg. Jnl. Feb. 15 1916; p 70; pp 1¼; 35c.

Groom, Percy.—*Pit Timber and Its Preservation.* [A paper read before the Midland Inst. of Mining, Civil and Mechanical Engineers].—Coll'y Guard. Mar. 24 1916; p 554; pp 1½*; I. & C. Tr. Rev. Mar. 24, 1916; p 330; pp 1⅜; 35c.

Johnson, R. H.—*Legal and Economic Aspects of the Conservation of Oil and Gas.* [A general discussion on the subject].—Nat. Gas Feb. 1916; p 70; pp 3; 35c.

Manning, V. H.—*The Conservation of Natural Gas.* [A paper read before the Natural Gas Assn.].—Natural Gas June 1916; p 225; pp 3½; 35c.

Mitchell, W. G. — *An Experimental Wood-Preserving Laboratory.* [A general descrption of a plant for testing with some details of the equipment].—Wood-Preserving June 1916; p 33; pp 3*; 35c.

Ricketts, L. D.—*Improved Mining and Metallurgy an Aid to Conservation.* [A paper read before the second Pan-American Scientific Congress pointing out the waste allowed by our present day methods].—Mg. World April 22 1916; p 778; pp 1½; 10c.

Sarchet, C. M.—*New Methods of Conservation.* [Treats on the subject from the viewpoint of efficient methods of drilling and operating].—Nat. Gas Feb. 1916; p 73; pp 1¼; 35c.

Selwyn-Brown, A.—*Fuel Oil from Shale.* [Treats on the conservation of the product by obtaining oil from carbonaceous shales].—Engg. Mag. Mar. 1916; p 913; pp 8; 35c.

Siebenthal, C. E.—*The Conservation of Lead and Zinc.* [A paper read before the Pan-American Scientific Soc. It is confined to conservation in smelting and concentrating the ores].—Mg. World Feb. 19 1916; p 393; pp 2; 10c.

——— *Treating Ties for the G. R. & I., I. P. L. and P. M. Railroads.* [A brief description of the plants' equipment and a general description of their operations].—Wood-Preserving June 1916; p 27; pp 2¼*; 35c.

——— *Western States Water Power Conference.* [A meeting of state officials from the different states to discuss the question of using our water power].—C. C. Chapman, Portland, Ore.; book; pp 279.

GOVERNMENT OWNERSHIP

Winchell, H. V.—*Relation of Governments to Mining.* [A paper read before the International Engineering Congress].—Canadian Mg. Jnl. Jan. 1 1916; p 14; pp 2; 35c.

——— *Die Unter der Preussischen Berg-, Hütten-, und Salinenverwaltung Stehenden Staatswerke im Jahre* 1914. [Treats on the salt, iron, coal, copper and smelting industries operated by the Prussian government].—Glückauf Feb. 19 1916; p 150; pp 4¼; 50c.

——— *Profits and Ore Reserves of the Government Areas, South Africa.* [The distribution and general conditions of the government lands are given].—S. Afr. Mg. Jnl. Feb. 19 1916; p 575; pp 1¼*; 35c.

——— *Warra State Coal Mine.* [A general description of the property and its workings. It has recently been taken under government control].—Queen. Govt. Mg. Jnl. Jan. 15 1916; p 5; pp 1*; 35c.

HISTORICAL

Alderson, M. W.—*Mining Possibilities in Colombia, S. A.* [A description of the alluvial deposits is given with details of operation at several properties. In discussing the good points and fault items of financial interest, production figures and costs are brought out].—Mg. World June 24 1916; p 1169; pp 3*; 10c.

Anderson, R. J.—*Recent Progress in Flotation.* [From the Jnl. of the Franklin Inst. A review of the recent history connected with the flotation process and tending towards its perfection].—Chem. Eng. May 1916; p 183; pp 5¾; 35c.

Blackstone, R.—*The Homestake Mine, South Dakota.* [Notes on the history of its development, discoverey and operation, including many of the prices paid for options and sales of claims which now make up the entire property].—Pahasapa June 1916; p 16; pp 15*; 30c.

Bochert, W. C.—*Review of Mining Operations in the Northern Hills, South Dakota.* [The history and production of the gold, silver and tungsten properties of the state are reviewed in detail, though briefly].—Pahasapa June 1916; p 40; pp 5*; 30c.

Bownocker, J. A.—*Natural Gas in Ohio.* [History of the wells and a general description of them].—Cleveland Engg. Soc. Mar. 1916; p 313; pp 20*; 45c.

Brinsmade, R. B.—*The Contact Mines of Vera Cruz.* [The geology of the formation is taken up with a general description of the country. Descriptions of different types of ore-bodies are then givn and some information on historic operation of the mines].—Mex. Mg. Jnl. April 1916; p 119; pp 3*; 35c.

Brodie, W. M.—*Metallurgy of Native Silver Ores in Southwestern Chihuahua, Mexico.* [A paper read before the Pan-American Scientific Cong. History, smelting, concentrating, cyaniding, amalgamation, occurrence and crushing are taken up].—*E. & M. J. Feb. 12 1916; p 297; pp 5*; 25c.*

Burrows, A. G.—*The Porcupine Gold Area.* [From a report by the Ontario Bureau of Mines. Early prospecting, together with history and geology are brought out].—Canadian Mg. Jnl. Feb. 15 1916; p 93; pp 3¼; 35c.

Clevenger, G. H.—*The Hydrometallurgical Treatment of Complex Gold and Silver Ores.* [A paper read before the Pan-American Scientific Cong. relative to the history and present practices in the amalgamation and cyanide processes].—Met. & Chem. Engg. Feb. 15 1916; p 203; pp 7¼; 30c.

Cole, F. L.—*Antimony in China.* [A description of the history of the industry, the nature and occurrence of the ores and methods of smelting the product].—M. & S. P. Mar. 11 1916; p 369; pp 5*; 20c.

Cotter, Arundel.—*The Authentic History of the United States Steel Corporation.* [Besides the growth and details regarding it, many items of financial interest are given].—Moody Mag. & Book Co., N. Y.; book; pp 231*.

Cottrell, F. G.—*Recent Progress in Electrical Smoke Precipitation.* [A paper read at the Pan-American Scientific Soc. A historical review of experiments and results in endeavoring to precipitate fine solids carried in gases].—E. & M. J. Feb. 26 1916; p 385; pp 8*; 25c.

Estep, H. Cole.—*Iron Mining on the Menominee Range, Michigan.* [Brings out history of the Porter lands and describes the geology, nature of the deposits and origin].—I. Tr. Rev. Jan. 20 1916; p 179; pp 6*; 25c.

Feldtmann, W. R.—*The Mines of Ashanti Goldfields Corporation, West Africa.* [The history, methods of mining, geology and origination of the company are given. These arsenical ores must first be roasted and are then cyanided].—Mg. Mag. May 1916; p 257; pp 12*; 50c.

Glasgow, J. W.—*Tungsten Mining at Atolia, California.* [Describes the history of the industry and occurrence of the ores].—Mg. & Oil Bull. Jan. 1916; p 31; pp 2*; 25c.

Haggen, E. A.—*Surf Inlet Mine, British Columbia.* [Describes the formation, ore bodies and items of financial interest].—Mg. Engg. & Elect. Rec. Dec. 1915; p 197; pp 4¾*; 35c.

Hardwick, F. W.—*The History of the Safety Lamp.* [A paper read before the Inst. of Mining, London].—Coll'y Guard. June 9 1916; p 1087; pp 1⅛; 35c.

Hennen, R. V.; Gawthrop, R. M.—*Wyoming and McDowell Counties, West Virginia.* [Coal, sandstone, natural gas

and petroleum are the principal resources. In three parts; history, physiography, geology and mineral resources are taken up in detail].—W. Va. Geol. Surv. 1915 Report; pp 783*.

Higgins, W. C.—*The McAlpine Mine on the Great Mother Lode.* [History, geology and equipment of this mine, which was discovered before 1855].—S. L. Mg. Rev. Mar. 15 1916; p 15; pp 3*; 25c.

Higginson, S.—*Completes First of New Furnaces.* [Gives details of the new furnaces at Steelton, Pa., of the Pennsylvania Steel Co., and a summary of the history of the old ones].—I. Tr. Rev. Jan. 6 1916; p 96; pp 4*; 60c.

Hoffman, J. D.—*The Bawdwin Mines, Burma, India.* [The mines are in the northern part of the province. They produce lead, silver and zinc as a complex ore. The history, geology, development of the mines and a brief on the treatment of the ore are given].—Mg. Mag. Mar. 1916; p 139; pp 8*; 50c.

Hopkins, P. E.—*The Kowkash Gold Area.* [Abst. from a report of the Canada Bureau of Mines. A recent camp in the gold industry of Canada in which history, geology, etc., are considered].—Canadian Mg. Jnl. April 15 1916; p 181; pp 4*; 35c.

Huessener, K.—*Modern Development in the Combustion of Blast-Furnace Gas with Special Reference to the Bradshaw Gas Burner.* [History and description of the burner are given and accompanied with charts showing results of successive operations].—A. I. M. E. Bull. Feb. 1916; p 443; pp 32*; 35c.

Holiday, F. A.—*Uralsk Province, Russia, and Its Oil Fields.* [A description of the country, the wells, refineries, production, etc.].—Petro. World Jan. 1916; p 9; pp 4*; 35c.

Jenkins, O. P.—*Phosphates and Dolomites of Johnson County, Tennessee.* [The geologic history, mineralogy, occurrence analyses of samples and geological structure of the country are all considered].—Res. of Tenn. April 1916; p 51; pp 56*.

Jennings, H.—*Evolution of the Cyanide Process on the Rand, South Africa.* [A paper read before the A. I. M. E.]—S. Afr. Engg. Jan. 1916; p 1; pp 1¼; 35c.

Keith, N. S.—*Another and Earlier Ballmill.* [Historic experience of the author with ball-mills in Colorado as far back as 1863].—M. & S. P. Jan. 29 1916; p 157; pp 1; 20c.

Lowry, T. M.—*Historical Introduction to Chemistry.* [Describes earlier methods and their evolution into their present form].—Macmillan & Co., London; book; pp 581*; $2.50.

Mathews, J. A.—*Electric Furnaces in Steel Making.* [A paper read before the American Iron & Steel Inst. A review of the development of this type of furnace. The principal types are discussed and described, as also are the products from them].—I. Tr. Rev. June 8 1916; p 1264; pp 3; 25c.

Maxwell-Lefroy, E.—*Wolframite Mining in the Tavoy District, Lower Burma.* [Brings out the important points in a detailed manner as regards history, geology, law, concentration of ores and mining in general].—Bull. of Inst. Mg. & Met. London; Dec. 9 1915; pp 18; 50c.

Megson, J. E.; Jones, H. S.—*Diesel Engine Practice.* [On the care and operation of earlier types of engines].—Jnl. of Elect. Power & Gas Jan. 1 1916; p 14; pp 1½; Jan. 8 1916; p 30; pp 2*; 70c.

Mercer, J. W.—*Mining in Ecuador.* [A paper read before the Pan-American Scientific Soc., describing the gold mines of Zamura, the only mining province in the country. History, mineralogy and geology are taken up in fair detail].—M. & S. P. Jan. 29 1916; p 161; pp 5*; 20c.

Morse, E. C.—*Mining in Western Oregon.* [A historic review of the mines and mills which have been and are at present operating].—M. & S. P. Jan. 29 1916; p 169; pp 2*; 20c.

O'Hara, C. C.—*An Early Magazine Article on the Black Hills, South Dakota.* [For the greater part this is an abstract from an article by L. P. Richardson in Scribner's Monthly, April 1877. It describes his trip into the country about 1876].—Pahasapa June 1916; p 11; pp 5*; 30c.

Pero, J. P.; Nulsen, J. C.—*The Evolution of the Malleable Iron Process.* [A general review of progress and comparison of present day methods with those of the past].—Foundry April 1916; p 133; pp 3; 25c.

Peterson, F. P.; Flynn, F. H.—*The Walhalla District, South Carolina.* [Gold occurs as leached surface ore and with sulphides. The latter are not of economic value. Geology and mineralogy of the formation and ores are described].—E. & M. J. Feb. 26 1916; p 379; pp 3¼*; 25c.

Pogue, J. E.—*The Emerald Deposits of Muzo, Colombia.* [A complete description covering history, geology, production, mineralogy and genesis of the formation and deposits].—Bull. A. I. M. E.; May 1916; p 798; pp 24*; 35c.

Pratt, W. E.—*The Iron Ores of the Philippine Islands.* [The ores were discovered in 1664 and are of the several different varieties. History, genesis of the deposits and geology of the surrounding formation are all taken up in some detail].—A. I. M. E. Bull. Feb. 1916; p 247; pp 16*; 35c.

Richards, R. H.—*Evolution of Ore-Dressing Methods.* [A paper read before the International Engineering Congress]. —Mex. Mg. Jnl. Jan. 1916; p 17; pp 2½; 35c.

Rickard, T. A.—*The Flotation Process.* [A paper read before the Canadian Inst. Mg. Eng. A number of old patents and other historic items are touched upon, with information taken from different sources on recent practice].—M. & S. P. Mar. 18 1916; p 407; pp 7*; 20c.

Rickard, T. A.—*The Flotation Process—III: Patents.* [Describes a number of recent and antiquated patents].—M. & S. P. April 1 1916; p 469; pp 5¾*; 20c.

Rickard, T. A.—*The Re-Opening of Old Mines Along Mother Lode, California.* [Gives details on the history of present and historical companies. Figures on their production and method of operation are given].—M. & S. P. June 24 1916; p 935; pp 5*; 20c.

Salfeld, C. S.—*What Is a Semi-Diesel Engine.* [A review of the history of this type and a description of the construction and characteristic features].—Pract. Eng. May 11 1916; p 461; pp 2¼*; 20c.

Schoskel, B. H.—*History of the Development of Jo Daviess County, Illinois.* [Is given in connection with the geology and geography of this zinc-lead bearing district].—Ill. Geol. Surv. Bull. 26; pp 233*.

Seaman, W. Y.—*The Lure of Cripple Creek Gold.* [A historic and current account of the gold deposits in this district. Production figures and descriptions of how many of the larger mines were discovered are given].—W. Y. Seaman, Denver; pp 48; 25c.

Singewald, J. T., Jr.; Miller, B. L.—*The Mining Industry of Peru.* [Besides talking of the metals mined the question of labor, law and transportation are spoken of].—E. & M. J. May 13 1916; p 845; pp 5½*; 25c.

Spring, L. W.—*Bessemer Steel.* [A non-technical talk on historic and present-day furnaces and methods of operation, showing the development of the present converters, furnaces, etc., from those used as far back as 1850].—Valve *World May 1916;* p 166; pp 9*; 20c.

Springer, J. F.—Primitive Iron Smelting in the Philippine Islands. [Treats the subject in a summarized way and gives briefs on some of the historic smelters].—I. Tr. Rev. Jan. 6 1916; p 77; pp 3*; 60c.

Trowbridge, A. C.; Shaw, E. W.—*Geology and Geography of the Galena and Elizabeth Quadrangles.* [This includes the zinc deposits of the Wisconsin-Illinois district and is accompanied with an account of the history of the development of this section of the country].—Ill. Geol. Surv. Bull. 26; pp 233*.

Winchell, H. V.—*The Tale of the National Gold Mine, Nevada; a Latter Day Bonanza.*—Mg. World May 13 1916; p 903; pp 3¾*; 10c.

Wyer, S. S.—*Development of the Law Relating to the Use of Gas Compressors in Natural Gas Production.* [The history goes back as far as 1885 and the more important cases which came up in court are given for years up to 1912].—A. I. M. E. Bull. Feb. 1916; p 263; pp 17; 35c

Yeatman, Pope.—*Mine of Chile Exploration Co., Chuquicamata, Chile.* [A paper read before the Pan-American Scientific Cong. History, geology, ore reserves, leaching and the electric power plant are all taken up in fair detail].—E. & M. J. Feb. 12 1916; p 307; pp 8*; 25c.

——— *Gold Placers of La Paz District—Arizona.* [On the history and operation of the deposits in the district]. —Mg. & Oil Bull. June 1916; p 160; pp 2*; 25c.

——— *Mica Mining* [A general review of the mica mining and marketing industry. Production, sorting and concentration of the raw material is briefly treated on and a chart is given showing the final subdivision of 1000 lbs. of the raw material and what total amount will be obtained for different grades of the same].—M. & S. P. June 10 1916; p 866; pp 1; 20c.

——— *The Dorr Cyanide Machinery in Metallurgy.* [A general account of the history which had to do with several classes of machinery now made by this company].—Mg. World April 8 1916; p 703; pp 2*; 10c.

SCHOOLS AND SOCIETIES

Bishop, R. N.—*Accomplishments of the Oil Industry Association.*—Mg. & Oil Bull. Jan. 1916; p 29; pp 1½; 25c.

Higgins, W. C.—*Meeting of the Rocky Mountain Coal Mining Institute.* [The meeting was held June 14 and 15 at Salt Lake City, Utah].—S. L. Mg. Rev. June 30 1916; p 17; pp 4½*; 25c.

Tashof, I. P.—*Kentucky Mining Institute.*—Coal Age June 17 1916; p 1046; pp 2*; 20c.

——— *American Chemical Society.* [Meeting at the Univ. of Illinois April 18-21].—Met. & Chem. Engg. May 1 1916; p 485; pp; 30c.

——— *American Institute of Chemical Engineers, Baltimore Meeting.*—Met. & Chem. Engg. Feb. 1 1916; p 159; pp 2¼; 30c.

——— *American Institute of Mining Engineers.* [The Iron & Steel section at the New York meeting Feb. 16 1916].—Iron Age Feb. 24 1916; p 488; pp 3; 30c.

——— *A. I. M. E., Utah, Section's Visit to Garfield, Utah.*—S. L. Mg. Rev. Mar. 15 1916; p 18; pp 2¾*; 25c.

——— *American Society of Mechanical Engineers.* [At their New Orleans meeting there was much discussion on preparedness].—I. Tr. Rev. April 20, 1916; p 877; pp 3*; 25c.

——— *American Electrochemical Society.* [Meeting on April 27, Washington, D. C. Also contains brief abstracts of papers read].—Met. & Chem. Engg. May 1 1916; p 473; pp 11¼*. Iron Age May 4; p 1076; pp 3; 30c.

——— *American Institute of Electrical Engineers.* [Considerable discussion was had on the water power and hydroelectric problem of this country].—Met. & Chem. Engg. May 1 1916; p 469; pp 4*; 30c.

——— *Association of Mining Electrical Engineers.* [An account of the meeting of the Lancashire, Cheshire and North Staffordshire branch].—I. & C. Tr. Rev. Feb. 18 1916; p 181; pp 1*; 35c.

——— *Canadian Institute of Mining Engineers.* [A report of papers and discussion at the recent Ottawa meeting on the flotation process].—Met. & Chem. Engg. Mar. 15 1916; p 323; pp 9½*; 30c.

——— *Canadian Mining Institute Annual Meeting.*—Canadian Mg. Jnl. Mar. 15 1916; p 133; pp ¾; 35c.

——— *Canadian Mining Institute, Western Branch.* [Ladysmith, B. C., Mar. 30, 1916].—Canadian Mg. Jnl. May 1 1916; p 230; pp 1; 35c.

——— *Canadian Society of Civil Engineers.* [Thirtieth annual meeting at Montreal].—Canadian Engg. Feb. 3 1916; p 197; pp 6¼; 35c.

——— *Central Association of Miners' Permanent Relief Societies.*—I. & C. Tr. Rev. June 2 1916; p 632; pp 1; 35c.

——— *Coke Oven Managers' Association, England.* [A general meeting].—Coll'y Guard. Mar. 31 1916; p 602; pp 1; 35c.

——— *Illinois Mining Institute.* [Account of the summer meeting, May 25 to 27, at Du Quoin, Ill.].—Coal Age June 10 1916; p 1007; pp 1*; 20c.

——— *Institute of Mechanical Engineers, England.*—Engg. Feb. 25 1916; p 175; pp 3; 35c.

——— *Institute of Metals.* [Annual meeting held on Mar. 29 1916, London].—Engg. Mar. 31 1916; p 306; pp 2⅝; 35c.

——— *Institution of Mechanical Engineers, England.* [Last ordinary meeting of the year, May 19, 1916].—Engg. May 26 1916; p 492; pp 2; 35c.

——— *Institution of Mining Engineers, England.* [Annual general meeting at London on June 6 1916].—I. & C. Tr. Rev. June 9 1916; p 658; pp 2; 35c.

——— *Iron and Steel Institute.* [Annual meeting at London, England].—I. & C. Tr. Rev. May 5 1916; p 508; pp 5*; 35c.

——— *Iron and Steel Institute.* [An account of the annual meeting, May 4].—Engg. May 12 1916; p 441; pp 2; 35c.

——— *Manchester Mining and Geological Society, England.* [Briefs on the papers read and a review of the proceedings].—Coll'y Guard. Dec. 24 1915; p 1290; pp 1; 35c.

———*Manchester Mining and Geological Society.*—Coll'y Guard. April 14 1916; p 717; pp ⅝; 35c.

——— *Mechanical Engineers' Institute.* [A general meeting, London, on Mar. 17 1916].—Engg. Mar. 24 1916; p 271; pp 1⅜; 35c.

——— *Midland Institute of Mining, Civil and Mechanical Engineers.*—Coll'y Guard. Mar. 24 1916; p 560; pp ½; 35c.

——— *Midland Institute of Mining, Civil and Mechanical Engineers.* [Held at Doncaster, England, May 27, 1916].—Coll'y Guard. June 2 1916; p 1041; pp 1; 35c.

——— *Mining Electrical Engineers' Association, England.* [Account of the West Scotland branch on April 8 1916].—I. & C. Tr. Rev. May 19 1916; p 581; pp 1; 35c.

——— *National Association of Colliery Managers.* [Annual meeting of the Scottish branch held April 15, 1916].—I. & C. Tr. Rev. April 28 1916; p 490; pp 1½; 35c.

——— *National Association of Colliery Managers, England.* [General annual meeting, 1916].—I. & C. Tr. Rev. June 16 1916; p 696; pp 2; 35c.

——— *Natural Gas Association of America.* [Eleventh annual meeting at

Pittsburgh, Pa.].—Natural Gas June 1916; p 218; pp 1¾; 35c.

——— *National Fertiliser Association.* [A general talk on the society].—Amer. Fert. Feb. 19 1916; p 30; pp 1½; 35c.

——— *North of England Institute of Mining and Mechanical Engineers.*—Coll'y Guard. Feb. 18 1916; p 313; pp 1⅛; 35c.

——— *Pan-American Congress, Proceedings of the Second Meeting.* [Abstracts of the more important papers read].—Mg. World Jan. 8 1916; p 63; pp 7; 10c.

——— *Scotland Mining Institute.*—Coll'y Guard. April 14 1916; p 707; pp ½; 35c.

——— *Sociedad Nacional de Mineria and the Chilean Congress of Mining and Metallurgy.* [An account of the laws and purposes of this Chilean society which is the same in Chile as the A. I. M. E. here].—Teniente Topics Dec. 1915; p 14; pp 2¼*; 35c.

——— *Society of Chemical Industry.* [New York meeting April 21. Papers on the "Application of Centrifugal Forces to Suspensions and Emulsions" and "The American By-Product Coke Oven Industry" are reproduced].—Met. & Chem. Engg. May 1 1916; p 500; pp 4½; 30c.

——— *South Wales Institute of Engineers.* [Briefs on papers read, proceedings and the presidential address].—Coll'y Guard. Feb. 4 1916; p 218; pp 1; 35c.

——— *United Engineering Society, Condensed Financial Statement for the Year* 1915.—A. I. E. E. Bull. April 1916; p 82; pp 2½; 35c.

——— *West Virginia Natural Gas Association.*—Natural Gas May 1916; p 181; pp 5; 30c.

——— *West Virginia Coal Mining Institute.* [The 17th semi-annual meeting, held June 1, at Bluefield, W. Va.].—Coal Tr. Bull. June 15 1916; p 27; pp 1¼; 25c.

——— *West Virginia Mining Institute.* [An account of the meeting, business transactions and papers read].—Coal Age June 10 1916; p 1005; pp 2¾; 20c.

——— *Year Book of the Scientific and Learned Societies of Great Britain and Ireland.* [The 32nd annual issue].—Chas. Griffin & Co., London; book; $2.25.

FINANCIAL

Bailly, M. L.—The Development of the French Coal, Iron and Steel Industries. [Abst. from L'Information. The development of a syndicate, a new iron-ore region, the profits and sales of coal and coke and other items of financial interest are brought out].—I. & C. Tr. Rev. May 12 1916; p 548; pp 1; 35c.

Blackstone, R.—*The Homestake Mine, South Dakota.* [Notes on the history of its development, discovery and operation, including many of the prices paid for options and sales of claims which now make up the entire property].—Pahasapa June 1916; p 16; pp 15*; 30c.

Brown, T. G.—*Estate Management and Mineral Valuations.* [A paper read before the Surveyors' Inst.].—Coll'y Guard. Mar. 10 1916; p 454; pp 2½; I. & C. Tr. Rev. Mar 10; p 263; pp 2¼; 35c.

Cooper, Francis.—*Financing an Enterprise.* [For promoters, investors and business men. Brings out methods for placing the undertaking before people as well as methods of financing after the capital is obtained].—Ronald Press, N. Y.; book; pp 524; $3.

Cotter, Arundel.—*The Authentic History of the United States Steel Corporation.* [Besides the growth and details regarding it, many items of financial interest are given].—Moody Mag. & Book Co., N. Y.; book; pp 231*.

Coulthard, R. W.—*Evaluating Coal Properties in Western Canada.* [A paper read at the International Engineering Congress meeting].—Canadian Mg. Jnl. Jan. 1 1916; p 21; pp 3; 35c.

Dunn, Gano.—*The Water Power Situation, Including Its Financial Aspect.* [Points out facts which give the financial man the aspects he retains toward hydro-electric installations].—Bull. A. I. M. E. May 1916; p 575; pp 16; 35c.

Grosvenor, W. M.—*Metallic Magnesium Industry.* [A paper read before the American Electrochemical Soc. The question of current prices and future markets are taken up with a brief on thermic methods of refining the metal].—E. & M. J. April 8 1916; p 652; pp 2; 25c.

Hager, Dorsey.—*Valuation of Oil Properties.* [Specific data, curves and description are given on the topic].—E. & M. J. May 27 1916; p 930; pp 1½*; 25c.

Haggen, E. A.—*Surf Inlet Mine, British Columbia.* [Describes the formation, ore bodies and items of financial interest].—Mg. Engg. & Elect. Rec. Dec. 1915; p 197; pp 4¾*; 35c.

Hore, R. E.—*The Canadian Mining Manual.* [An economic geological account of the minerals which are mined or found in Canada. Reports are then given

of most of the Canadian mining companies, which are arranged alphabetically].—Mines Pub. Co., Toronto; book; pp 432*; $2.50.

Key, A. Cooper.—*Rand Mining in* 1915. [On the production of the gold industry and financial figures which show that the profits are about stationary, but dividends lessened].—E. & M. J. May 6 1916; p 809; pp 1¾*; 25c.

Lombardi, M. E.—*Valuation of Oil Lands and Properties.* [A paper read before the International Engineering Congress].—Oil Age Oct. 1916; p 7; pp 5¾; 35c.

McDonald, P. B.—*Mining at the Nevada Consolidated, Nevada.* [Items of financial interest from many other copper companies are spoken of. The deposit is described from a mining standpoint. The methods of timbering, haulage, drilling, etc., are described].—M. & S. P. June 10 1916; p 858; pp 4*; 20c.

Plumb, A. M.—*Ore Valuation—How Arrived At.* [It is here shown that assay values multiplied by market values does not give the value of ore. The value of various grades of concentrates must be estimated and the value per ton computed therefrom].—Mg. World Jan. 8 1916; p 71; pp 1¼; 10c.

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